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A

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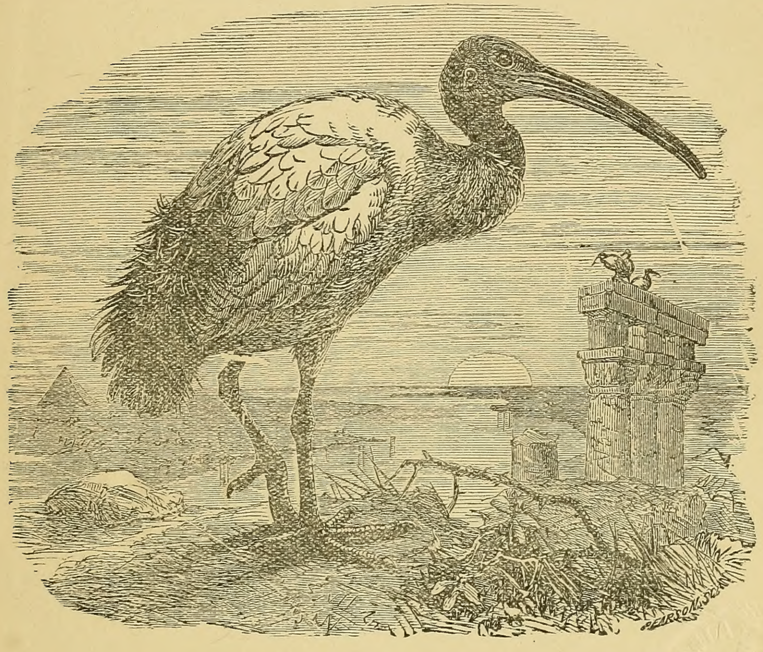
WILLIAM LUTLEY SCLATER, M.A., F.Z.S.



VOL. II. 1914.

TENTH SERIES.

Delectasti me, Domine, in operibus manuum tuarum.

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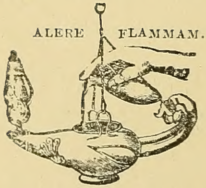
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„ 2. „ April 2nd.
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LIST OF THE MEMBERS

OF THE

BRITISH ORNITHOLOGISTS' UNION.

1914.

[An asterisk indicates an Original Member. It is particularly requested that Members should give notice to the Secretary of the Union of any error in their addresses or descriptions in this List, in order that it may be corrected.]

Date of Election.

1914. Aldworth, Thomas Preston; Otham Lodge, Otham, near Maidstone, Kent.

1911. Alexander, Christopher James; International Institute of Agriculture, Rome, Italy.

1911. Alexander, Horace Gundry; King's College, Cambridge; and 3 Mayfield Road, Tunbridge Wells, Kent.

1888. Aplin, Oliver Vernon; Stonehill House, Bloxham, Oxon.

5 1896. Archibald, Charles F.; 2 Darnley Road, West Park, Leeds, Yorks.

1896. Arrigoni degli Oddi, Count Ettore, Professor of Zoology, University, Padua; and Ca' oddo, Monselice, Padua, Italy.

1901. Arundel, Major Walter B., F.Z.S.; High Ackworth, Pontefract, Yorks.

1901. Ashby, Herbert; Broadway House, Brookvale Road, Southampton.

1908. Ashworth, Dr. John Wallwork, M.R.C.S., L.R.C.P., F.R.G.S., F.G.S.; Thorne Bank, Heaton Moor, near Stockport, Cheshire.

10 1897. Astley, Hubert Delaval, M.A., F.Z.S.; Brinsop Court, Hereford.

1885. Backhouse, James, F.Z.S.; The Red House, Knaresborough, Yorks.

1904. Bahr, Philip Heinrich, M.A., M.B., M.R.C.S., L.R.C.P., F.Z.S.; 12 Vicarage Gardens, Kensington, W.

1901. Bailward, Col. Arthur Churchill, F.Z.S. (R.F.A.); 64 Victoria Street, S.W.

Date of Election.

1892. Baker, E. C. Stuart, F.Z.S.; 6 Harold Road, Upper Norwood, S.E. (*Hon. Secretary and Treasurer.*)

15 1901. Baker, John C., M.B., B.A.; Ceely House, Aylesbury, Bucks.

1908. Ball, Crispin Alfred (Sudan Civil Service); Singa, Sennar Province, Sudan.

1889. Balston, Richard James, F.Z.S.; Springfield, Maidstone, Kent.

1906. Bannerman, David A., B.A., F.R.G.S.; 6 More's Garden, Cheyne Walk, S.W.

1890. Barclay, Francis Hubert, F.Z.S.; The Warren, Cromer, Norfolk.

20 1885. Barclay, Hugh Gurney, F.Z.S.; Colney Hall, Norwich, Norfolk.

1881. Barrington, Richard Manliffe, LL.D.; Fassaroe, Bray, Co. Wicklow, Ireland.

1903. Bartels, Max.; Pasir Datar, Halte Tjisaät (Preanger), Java, Dutch East Indies.

1906. Bates, George L., C.M.Z.S.; Bitye, Ebolowa, Kamerun, West Africa.

1912. Baxendale, Francis Richard Salisbury; Commissioner of Famagusta, Cyprus.

25 1913. Baynes, George Kenneth; 120 Warwick Street, S.W.

1912. Beebe, C. William, C.M.Z.S.; Curator of Birds, New York Zoological Park, New York, U.S.A.

1910. Beeston, Harry; Sunnymead, South Street, Havant, Hants.

1897. Benson, John.

1897. Berry, William, B.A., LL.B.; Tayfield, Newport, Fifeshire.

30 1914. Betham, Col. Robert; 101st Regt. Pioneers, Bangalore, India.

1907. Bethell, The Hon. Richard; 30 Hill Street, Mayfair, W.

1907. Bickerton, William, F.Z.S.; The Firs, Farraline Road, Watford, Herts.

1880. Bidwell, Edward; 1 Trig Lane, Upper Thames Street, E.C.

1892. Bird, The Rev. Maurice C. H., M.A.; Brunstead Rectory, Stalham, S.O., Norfolk.

35 1891. Blaauw, Frans Ernst, C.M.Z.S.; Gooilust, 'sGraveland, Hilversum, Noord-Holland.

1913. Blackwood, George Glendinning; 2 Bellevue Crescent, Edinburgh.

1912. Blaine, Gilbert, F.Z.S.; 5 a The Albany, Piccadilly, W.

1903. Blathwayt, The Rev. Francis Linley, M.A.; Doddington Rectory, Lincoln.

Date of Election.

1914. Blyth, Robert Oswald, M.A.; Haslemere, Stanmore, Middlesex.

40 1897. Bonar, The Rev. Horatius Ninian, F.Z.S.; Saltoun, Pencaitland, E. Lothian.

1905. Bone, Henry Peters, F.Z.S.; 28 Adelaide Crescent, Brighton.

1894. Bonhote, John Lewis, M.A., F.L.S., F.Z.S.; Zoological Gardens, Giza, Egypt; and Gade Spring Lodge, Hemel Hempstead, Herts.

1906. Boorman, Staines; Heath Farm, Send, Woking, Surrey.

1898. Booth, George Albert; Whalley Range, Longton, Lancs.

45 1904. Booth, Harry B.; Ryhill, Ben Rhydding, *viâ* Leeds, Yorks.

1908. Borrer, Clifford Dalison; 20 Pelham Crescent, South Kensington, S.W.

1910. Brabourne, Wyndham Wentworth, Lord, F.Z.S.; 19 Curzon Street, Mayfair, W.

1895. Bradford, Sir John Rose, K.C.M.G., M.D., D.Sc., F.R.S., F.Z.S; 8 Manchester Square, W.

1902. Bridgeman, Commdr. The Hon. Richard O. B., R.N.; H.M.S. 'Hyacinth,' Cape Station.

50 1909. Briggs, Thomas Henry, M.A., F.E.S.; Rock House, Lynmouth, R.S.O., N. Devon.

1902. Bristowe, Bertram Arthur; The Cottage, Stoke D'Abernon, Cobham, Surrey.

1885. Brockholes, William Fitzherbert; Claughton Hall, Garstang, Lancashire.

1908. Brook, Edward Jonas, F.Z.S.; Hoddam Castle, Ecclefechan, Dumfriesshire.

1890. Brooke, Harry Brinsley; 169 Queen's Gate, S.W.

55 1899. Brooke, John Arthur, J.P.; Fenay Hall, Huddersfield; and Fearn Lodge, Ardgay, Ross-shire.

1912. Brown, Thomas Edward; c/o Messrs. G. Beyts & Co., 11 Port Tewfik, Suez, Egypt.

1900. Bruce, William Speirs, LL.D., F.R.S.E.; Scottish Oceanographical Laboratory, Surgeon's Hall, Edinburgh.

1914. Buchanan, Col. Kenneth (Indian Army), c/o Messrs. Cox & Co., 16 Charing Cross, S.W.

1907. Buckley, Charles Mars; 4 Hans Crescent, S.W.

60 1906. Bucknill, John Alexander Strachey, K.C., M.A., F.Z.S.; Attorney General, Hong Kong, China.

1895. Bulgaria, H.M. Ferdinand, King of, F.Z.S.; The Palace, Sofia, Bulgaria.

Date of Election.

1908. Bunyard, Percy Frederick, F.Z.S.; 57 Kidderminster Road, Croydon, Surrey.

1907. Butler, Arthur Gardiner, Ph.D., F.L.S., F.Z.S.; 124 Beckenham Road, Beckenham, Kent.

1899. Butler, Arthur Lennox, F.Z.S.; Superintendent of Game Preservation, Sudan Government, Khartum, Sudan.

65 1884. Butler, Lieut.-Col. E. A.; Winsford Hall, Stokesby, Great Yarmouth.

1900. Buttress, Bernard A. E.; Craft Hill, Dry Drayton, Cambridge.

1905. Buxton, Anthony; Knighton, Buckhurst Hill, Essex.

1884. Buxton, Geoffrey Fowell, F.Z.S.; Dunston Hall, Norwich, Norfolk.

1912. Buxton, Patrick Alfred; Fairhill, Tonbridge, Kent.

70 1889. Cameron, Ewen Somerled, F.Z.S.; Marsh P.O., Montana, U.S.A.

1896. Cameron, Capt. James S.; (2nd Bn. Royal Sussex Regt.) Low Wood, Bethersden, Ashford, Kent.

1888. Cameron, John Duncan; Low Wood, Bethersden, Ashford, Kent.

1909. Campbell, David Callender, J.P.; Templemore Park, Londonderry, Ireland.

1909. Carroll, Clement Joseph; Rocklow, Fethard, Co. Tipperary, Ireland.

75 1904. Carruthers, Alexander Douglas M.; Little Munden Rectory, Ware, Herts.

1908. Carter, Thomas; St. Edmunds, Throwley Road, Sutton, Surrey.

1890. Cave, Charles John Philip, M.A., F.Z.S.; Ditcham Park, Petersfield, Hants.

1913. Chaplin, Nugent; The Lodge, Bourne End, Bucks.

1884. Chapman, Abel, F.Z.S.; Houxty, Wark-on-Tyne, Northumberland.

80 1882. Chase, Robert William; St. Brelâde, King's Norton, Worcestershire.

1908. Cheesman, Robert E.; The Vents, Cranbrook, Kent.

1897. Cholmley, Alfred John, F.Z.S.; Place Newton, Rillington, Yorks.

1910. Chubb, Charles, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W.

1912. Clark, George Wingfield; 2 Devana Terrace, Huntingdon Road, Cambridge.

Date of Election.

85 1904 Clarke, Capt. Goland van Holt, D.S.O., F.Z.S.; Chilworth Court, Romsey, Hants.

1889. Clarke, Col. Stephenson Robert, C.B., F.Z.S.; Borde Hill, Cuckfield, Sussex.

1880. Clarke, William Eagle, F.L.S.; Royal Scottish Museum, Edinburgh.

1904. Cochrane, Captain Henry Lake. R.N.; H.M.S. 'Yarmouth,' China Station.

1898. Cocks, Alfred Heneage, M.A., F.Z.S.; Poynetts, Skirmett, near Henley-on-Thames, Oxon.

90 1895. Coles, Richard Edward; Ashley Arnewood, New Milton, S.O., Hants.

1911. Collett, Anthony Keeling; 5 Stone Buildings, Lincoln's Inn, W.C.

1904. Collier, Charles, F.Z.S.; Bridge House, Culmstock, Devon; and Windham Club, St. James' Square, S.W.

1909. Congreve, William Maitland (Lieut. R.A.); Forest House, Kerry, Montgomeryshire.

1910. Conigrave, Charles Price, F.R.G.S., R.A.O.U.; c/o Department of Agriculture, Perth, Western Australia.

95 1913. Cook, James Pemberton; c/o Messrs. Wallace & Co., Bombay Burmah Trading Corporation, Ltd., Bombay, India.

1888. Cordeaux, Major William Wilfrid, (late 21st Lancers), Hopebourne, Harbledown, Canterbury, Kent.

1914. Courtois, The Rev. F. L., S.J.; Curator of the Sikawei Museum, near Shanghai, China.

1913. Cowan, Francis; Wester Lea, Murrayfield, Midlothian.

1896. Cowie, Col. Alexander Hugh, F.Z.S.

100 1894. Crewe, Sir Vauncey Harpur, Bt.; Calke Abbey, Derby.

1903. Crowley, John Cyril, M.A.; 5 Beech House Road, Croydon, Surrey.

1899. Curtis, Frederick, F.R.C.S.; Lyndens, Redhill, Surrey.

1877. Dalgleish, John J.; Brankston Grange, Bogside Station, Alloa, Forth.

1896. Danford, Capt. Bertram W. Y., R.E.; Bermuda.

105 1883. Davidson, James, F.Z.S.; 32 Drumsheugh Gardens, Edinburgh.

1908. Davies, Claude G.; 'E' Squadron, Cape Mounted Riflemen, Matatiele, E. Griqualand, South Africa.

1905. Davis, K. J. Acton, M.C., F.R.C.S.; 16 Upper Wimpole Street, W.

Date of Election.

1909. Delmé-Radcliffe, Capt. Alfred (105th Maratha Light Infantry); c/o Messrs. Cox & Co., Bombay, India.

1902. Dent, Charles Henry; c/o Messrs. Barclay & Co. Ltd., Darlington, Durham.

110 1891. De Vis, Charles W.; c/o Messrs. Quaritch, 11 Grafton Street, W.

1893. De Winton, William Edward, F.Z.S.; Southover Hall, Burwash, Sussex.

1896. Dobbie, James Bell, F.R.S.E., F.Z.S.; 12 South Inverleith Terrace, Edinburgh.

1889. Dobie, William Henry, M.R.C.S.; 2 Hunter Street, Chester.

1911. Dodsworth, Pelham Theobald Landale, F.Z.S.; Prospect Cottage, Simla, W., (Punjab), India.

115 1904. Dorrien-Smith, Thomas Algernon, J.P., D.L.; Tresco Abbey, Scilly Isles.

1904. Drake-Brockman, Dr. Ralph Evelyn, M.R.C.S., L.R.C.P., F.Z.S.; Cheriton, 26 Portchester Road, Bournemouth, Hants.

1865. Dresser, Henry Eeles, F.L.S., F.Z.S.; c/o Dr. Tattersall, Owen's College Museum, Manchester.

1896. Drewitt, Frederic Dawtrey, M.A., M.D., F.Z.S.; 14 Palace Gardens Terrace, Kensington, W.

1913. Drummond, James, F.L.S., F.Z.S.; 'Lyttelton Times,' Christchurch, New Zealand.

120 1890. Drummond-Hay, Col. James A. G. R.- (Coldstream Guards); Seggieden, by Perth.

1904. Duckworth, George Herbert; Dalingridge Place, *viâ* East Grinstead, Sussex.

1878. Durnford, W. Arthur, J.P.; Elsecar, Barnsley, Yorks.

1905. Dutton, The Hon. and Rev. Canon Frederick George; Bibury, Fairford, Gloucestershire.

1914. Dyer, Cecil Macmillan, Christ's College, Cambridge.

125 1903. Earle, Edward Vavasour; Fowden Hall, London Road, Maidstone, Kent.

1914. Edwards, Laurence Albert Curtis, M.A.; 12 Market Street, Rye, Sussex.

1895. Elliot, Edmund A. S., M.R.C.S.; Woodville, Kingsbridge, South Devon.

1884. Elliott, Algernon, C.I.E.; 16 Belsize Grove, Hampstead, N.W.

Date of Election.

1902. Ellison, The Rev. Allan, M.A.; Althorpe Rectory, Doncaster, Yorks.

130 1904. Elton, Henry Brown, B.A., M.B., B.C., M.R.C.S., L.R.C.P.; Glenview, Llandovery, South Wales.

1866. Elwes, Henry John, F.R.S., F.Z.S.; Colesborne, Cheltenham, Gloucestershire.

1914. Etheridge, Robert, Junr., C.M.Z.S.; Curator of the Australian Museum, Sydney, New South Wales, Australia.

1879. Evans, Arthur Humble, M.A., F.Z.S.; 9 Harvey Road, Cambridge.

1888. Evans, William, F.R.S.E.; 38 Morningside Park, Edinburgh.

135 1905. Ewen, Guy L'Estrange; St. James's Club, Piccadilly, W.

1892. Fairbridge, William George; 141 Long Market Street, Capetown, South Africa.

1909. Fanshawe, Capt. Richard D. (late Scots Guards); Adbury Holt, Newbury, Berks.

1894. Farquhar, Rear-Admiral Arthur Murray, C.V.O.; Granville Lodge, Aboyne, Aberdeenshire.

1898. Farquhar, Capt. Stuart St. J., R.N.; Naval & Military Club, Piccadilly, W.

140 1873.* Feilden, Col. Henry Wemyss, C.B., C.M.Z.S.; Burwash, Sussex; and Junior United Service Club, S.W.

1901. Finlinson, Horace W., F.Z.S.; 5 Rosamond Road, Bedford.

1902. Flower, Capt. Stanley Smyth, F.Z.S.; Kedah House, Zoological Gardens, Giza, Egypt.

1912. Floyd, James Francis Murray, B.A.; The University, Glasgow.

1884. Forbes, Henry Ogg, LL.D., F.Z.S.; Redcliffe, Beaconsfield, Bucks.

145 1912. Foster, Arthur H., M.R.C.S., L.R.C.P.; Sussex House, 88 Tilehouse Street, Hitchin, Herts.

1903. Foster, Nevin Harkness, F.L.S., M.R.I.A.; Hillsborough, Co. Down, Ireland.

1880. Foster, William; 39 Colville Gardens, Bayswater, W.

1887. Fowler, William Warde, M.A.; Lincoln College, Oxford.

1865. Fox, The Rev. Henry Elliott, M.A.; The Croft, Lytton Grove, Putney Hill, S.W.

150 1881. Freke, Percy Evans; Southpoint, Limes Road, Folkestone.

1895. Frohawk, Frederick William, F.E.S.; Stanley House, Park Road, Wallington, Surrey.

Date of Election.

1909. Frost, William Edward, J.P.; Ardvreck, Crieff, Perthshire.

1881. Gadow, Hans, Ph.D., F.R.S., F.Z.S.; University Museum of Zoology, Cambridge.

1886. Gainsborough, Charles William Francis, Earl of; Exton Park, Oakham, Rutland.

155 1907. Gandolfi, Alfonso Otho Gandolfi-Hornyold, Duke, Ph.D.; Blackmore Park, Hanley Swan, Worcestershire.

1900. Garnett, Charles; Kington Langley, Chippenham, Wilts.; and New University Club, St. James's Street, S.W.

1892. Gerrard, John, Government Inspector of Mines; Worsley, near Manchester, Lancs.

1902. Gibbins, William Bevington, F.Z.S.; Ettington, Stratford-on-Avon, Warwickshire.

1879. Gibson, Ernest, F.L.S., F.Z.S., F.R.G.S.; 25 Cadogan Place, S.W.

160 1902. Gillman, Arthur Riley; Heath Vale, Farnham, Surrey.

1903. Gladstone, Hugh Steuart, M.A., F.Z.S., F.R.S.E., F.S.A. Scot.; Capenoch, Thornhill, Dumfriesshire.

1908. Godman, Capt. Edward Shirley (2nd Dorset Regiment); Hampsteel, Cowfold, Sussex.

* 1858. Godman, Frederick DuCane, D.C.L., F.R.S., F.Z.S.; 45 Pont Street, S.W.; and South Lodge, Horsham, Sussex. (*Gold Medallist.*)

* 1858. Godman, Percy Sanden, B.A., C.M.Z.S.; Hampsteel, Cowfold, Sussex. (*Gold Medallist.*)

165 1906. Goodall, Jeremiah Matthews, F.Z.S.; The Nest, Bembridge, Isle of Wight.

1901. Goodchild, Herbert; 66 Gloucester Road, Regent's Park, N.W.

1900. Goodfellow, Walter, F.Z.S.; The Poplars, Kettering, Northants.

1906. Gordon, Seton Paul, F.Z.S.; Auchintoul, Aboyne, Aberdeenshire.

1912. Gosse, Philip, M.R.C.S., L.R.C.P.; Curtlemead, Beaulieu, Hants.

170 1899. Gould, Francis Herbert Carruthers, F.Z.S.; Matham Manor House, East Molesey, Surrey.

1895. Grabham, Oxley, M.A.; The Museum, York.

1909. Grant, Claude Henry Baxter, F.Z.S.; Sports Club, St. James' Square, S.W.

1913. Greening, Linnæus, F L.S., F.Z.S.; Fairlight, Grappenhall, Cheshire.

Date of Election.

1909. Grey, The Rt. Hon. Sir Edward, Bt., P.C., F.Z.S.; Falloden, Christon Bank, R.S.O., Northumberland.

175 1906. Griffith, Arthur Foster; 59 Montpellier Road, Brighton, Sussex.

1885. Guillemard, Francis Henry Hill, M.A., M.D., F.Z.S.; Old Mill House, Trumpington, Cambridge.

1908. Gurney, Gerard Hudson, F.Z.S., F.E.S.; Keswick Hall, Norwich, Norfolk.

1870. Gurney, John Henry, F.Z.S.; Keswick Hall, Norwich; and Athenæum Club, Pall Mall, S.W.

1896. Gurney, Robert, F.Z.S.; Ingham Old Hall, Stalham, Norfolk.

180 1890. Gwatkin, Joshua Reynolds Gascoign; The Manor House, Potterne, Devizes, Wilts.

1891. Haigh, George Henry Caton; Grainsby Hall, Great Grimsby, Lincolnshire.

1887. Haines, John Pleydell Wilton; 17 King Street, Gloucester.

1898. Hale, The Rev. James Rashleigh, M.A.; Boxley Vicarage, Maidstone, Kent.

1905. Hamerton, Major Albert Edward, D.S.O., R.A.M.C., F.Z.S.; c/o Messrs. Holt & Co., 3 Whitehall Place, S.W.

185 1913. Hardy, Capt. Ernest Clifford, R.N.; Hydrographic Department, Admiralty, Whitehall, S.W.

1904. Harington, Major Herbert Hastings; 72nd Punjabis, Peshawar, N. W. F. P., India; and c/o Messrs. Thos. Cook & Sons, Ludgate Circus, E.C.

1900. Harper, Edmund William, F.Z.S.; c/o Messrs. Wardle & Co., Nairobi, British East Africa.

1900. Harris, Henry Edward; 2 St. Aubyn's Mansions, Hove, Sussex.

1893. Hartert, Ernst J. O., Ph.D., F.Z.S.; The Zoological Museum, Tring, Herts. (*Committee.*)

190 1868. Harting, James Edmund, F.Z.S.; Edgewood, Weybridge, Surrey.

1893. Hartmann, William; Milburn, Esher, Surrey.

1899. Harvey, Lt.-Col. Robert Napier, R.E.; 1 Staff Quarters, Brompton Barracks, Chatham.

1873. Harvie-Brown, John A., LL.D., F.R.S.E., F.Z.S.; Dunipace, Larbert, Stirlingshire.

1900. Hasluck, Percy Pedley Harford; The Wilderness, Southgate, N.

195 1902. Hatfeild, John Randall; Edlington Hall, Horncastle, Lincolnshire.

Date of Election.

1898. Hawker, Richard Macdonnell, F.Z.S.; Bath Club, Dover Street, W.; and c/o Messrs. Dalgety & Co., 96 Bishopsgate, E.C.

1905. Hawkshaw, John Clarke, M.A., M.I.C.E., F.G.S.; Hollycombe, Liphook, Hants.; and 33 Great George Street, Westminster, S.W.

1905. Headley, Frederick Webb, M.A., F.Z.S.; Haileybury College, Hertford.

1902. Hett, Geoffrey Seccombe, M.B., F.Z.S.; 8 Wimpole Street, W.

200 1913. Hewitt, John, M.A.; Director of the Albany Museum, Grahamstown, South Africa.

1899. Heywood, Richard, F.Z.S.; Narside, Narborough, Swaffham, Norfolk.

1900. Hills, John Waller.; Queen Anne's Mansions, Westminster, S.W.; and Highhead Castle, Carlisle, Cumberland.

1884. Holdsworth, Charles James, J.P.; Fernhill, Alderley Edge, Cheshire.

1912. Hony, George Bathurst; 8 Christ's Lane, Cambridge.

205 1905. Hopkinson, Emilius, M.B., D.S.O., F.Z.S.; 45 Sussex Square, Brighton, Sussex; and Bathurst, Gambia, West Africa.

1904. Horsbrugh, Major Boyd Robert, F.Z.S.; Tandridge Priory, Oxted, Surrey.

1888. Horsfield, Herbert Knight; Crescent Hill, Filey, Yorks.

1895. Howard, Henry Eliot, F.Z.S.; Clarelands, near Stourport, Worcestershire.

1881. Howard, Robert James; Shearbank, Blackburn, Lancashire.

210 1911. Hudson, Edward, 15 Queen Anne's Gate, S.W.

1911. Hudson, Reginald; 16 Warwick Road, Stratford-on-Avon.

1901. Ingram, Collingwood, F.Z.S.; Sussex Mansions, Westgate-on-Sea, Kent.

1902. Innes Bey, Dr. Walter Francis; Curator of the Zoological Museum, School of Medicine, Cairo, Egypt.

1913. Iredale, Tom; 65 Longridge Road, Earl's Court, S.W.

215 1888. Jackson, Sir Frederick John, C.B., K.C.M.G., F.L.S., F.Z.S.; Entebbe, Uganda, British East Africa; and The Red House, Aldeburgh, Suffolk.

1892. James, Henry Ashworth, F.Z.S.; Hurstmonceux Place, Hailsham, Sussex.

1896. Jesse, William, B.A., F.Z.S.; Meerut College, Meerut, India.

Date of Election.

1889. Johnson, Frederick Ponsonby, B.A., J.P., D.L.; Castlesteads, Brampton, Cumberland.

1891. Johnston, Sir Harry Hamilton, G.C.M.G., K.C.B., F.Z.S.; St. John's Priory, Poling, near Arundel, Sussex.

220 1905. Johnstone, Edwin James, F.Z.S.; Burrswood, Groombridge, Sussex; and Junior Carlton Club, Pall Mall, S.W.

1900. Jones, Major Henry, F.Z.S. (late 62nd Regt.); East Wickham House, Welling, Kent.

1909. Jones, Fleet-Surgeon Kenneth Hurlstone, M.B., Ch.B., F.Z.S., R.N.; The Manor House, St. Stephen's, Canterbury, Kent.

1899. Jourdain, The Rev. Francis Charles Robert, M.A.; Appleton Rectory, Abingdon, Berks.

1902. Joy, Norman Humbert, M.R.C.S., L.R.C.P.; Thurlestone, Bradfield, near Reading, Berks.

225 1880. Kelham, Brigadier-General Henry Robert, C.B. (late Highland Light Infantry); Fremington House, Fremington, N. Devon.

1894. Kelsall, Major Harry Joseph, R.A.; Leith Fort, Edinburgh.

1897. Kelsall, The Rev. John Edward, M.A.; Milton Rectory, New Milton, Hants.

1904. Kelso, John Edward Harry, M.D.; Braeside, Edgewood, Lower Arrow Lake, British Columbia.

1914. Kennedy, John Noble, R.N.; H.M.S. "Antrim," 3rd Cruiser Squadron, c/o G.P.O., London, E.C.

230 1891. Kerr, John Graham, F.R.S., F.Z.S., Regius Professor of Zoology, 9 The University, Glasgow.

1895. Kingsford, William Edward; Cairo, Egypt.

1902. Kinnear, Norman Boyd, C.M.Z.S.; Bombay Natural History Society, 6 Apollo Street, Bombay, India.

1910. Kloss, Cecil Boden, F.Z.S., F.R.A.I.; Assistant Director of Museums, Kuala Lumpur, Federated Malay States.

1900. Koenig, Dr. Alexander Ferdinand; Coblenzer-Strasse 164, Bonn, Germany.

235 1906. Kollibay, Paul; Ring 121, Neisse, Germany.

1892. Laidlaw, Thomas Geddes; Bank of Scotland House, Duns, Berwickshire.

1913. Lambert, Godfrey Charles; Woodcote, Esher, Surrey.

1884. Langton, Herbert; St. Moritz, 61 Dyke Road, Brighton, Sussex.

1881. Lascelles, The Hon. Gerald William, F.Z.S.; The King's House, Lyndhurst, Hants.

Date of
Election.

240 1892. La Touche, John David Digues, C.M.Z.S.; c/o Custom House, Chinwangtao, North China (*viâ* Siberia).

1910. Lees, T. O. Hastings, M.A., F.Z.S.; 4 Osnaburgh Terrace, Regent's Park, N.W.

1905. Legge, The Hon. Gerald; c/o Messrs. Hoare, 37 Fleet Street, E.C.

1906. Leigh, John Hamilton, F.Z.S.; Culloden House, Inverness-shire.

1898. Le Souëf, Dudley, C.M.Z.S.; Director of the Zoological Gardens, Melbourne, Victoria, Australia.

245 1868. Le Strange, Hamon, F.Z.S.; Hunstanton Hall, King's Lynn, Norfolk.

1889. Leyland, Christopher John, F.Z.S.; Haggerston Castle, Beal, Northumberland.

1897. Lilford, John, Lord, F.Z.S.; Lilford Hall, Oundle, Northants.

1914. Lindsay-Smith, Major John (Indian Army); Supply & Transport Corps, Commdt. Camel Corps, Multan, Punjab, India.

1909. Lings, George Herbert; 208 Piermont Avenue, Nyack, N.Y., U.S.A.

250 1897. Lodge, George Edward, F.Z.S.; 5 The Studios, Thurloe Square, S.W.

1908. Long, Sydney Herbert, M.D., F.Z.S.; 37 St. Giles Street, Norwich, Norfolk.

1904. Lowe, Dr. Percy R., B.A., M.B.; 24 Whitehall Court, S.W.

1914. Lowe, Willoughby Prescott; Gorsemoor, Throwleigh, Okehampton, Devon.

1902. Lucas, The Right Hon. Auberon Thomas, Lord, P.C., F.Z.S.; 32 Old Queen Street, W.

255 1904. Lynes, Captain Hubert, R.N.; Garthmeilio, Corwen, N. Wales.

1905. McGregor, Peter James Colquhoun; H.M. Consul, British Consulate, Jerusalem, Palestine, Turkey-in-Asia.

1897. McLean, John Chambers; General Post Office, Wellington, New Zealand.

1899. Macmillan, George Augustin, F.Z.S.; 27 Queen's Gate Gardens, S.W.

1906. Macmillan, William Edward Frank; 42 Onslow Square, S.W.

260 1909. Macnaghten, Norman Donnelly, F.Z.S.; Ministry of the Interior, Cairo, Egypt.

Date of Election.

1894. Macpherson, Arthur Holte, F.Z.S.; 21 Campden Hill Square, Kensington, W.

1906. Magrath, Lt.-Col. Henry Augustus Frederick; c/o Messrs. H. S. King & Co., 9 Pall Mall, S.W.

1907. Mann, Thomas Hugh, F.Z.S.; Trulls Hatch, Rotherfield, Sussex.

1904. Mapleton, Harvey William, B.A.; Weare, Axbridge, Somerset.

265 1894. Marshall, Archibald McLean, F.Z.S.; Great Chitcombe, Brede, Sussex.

1894. Marshall, James McLean, F.Z.S.; Bleaton Hallet, Blairgowrie, Perthshire.

1897. Mason, Col. Edward Snow; 10 Lindum Terrace, Lincoln.

1898. Massey, Herbert; Ivy Lea, Burnage, Didsbury, Manchester.

1907. Mathews, Gregory Macalister, F.L.S., F.R.S.E., F.Z.S.; Langley Mount, Watford, Herts.

270 1883. Meade-Waldo, Edmund Gustavus Bloomfield, F.Z.S.; Hever Warren, Hever, Kent.

1913. Meiklejohn, Kenneth Forbes (Lieut. 1st Cameron Highlanders); The Castle, Edinburgh.

1912. Meiklejohn, Major Ronald Forbes, D.S.O. (1st. Bn. Royal Warwickshire Regt.); Shorncliffe, Kent.

1899. Meinertzhagen, Capt. Richard, F.Z.S. (Royal Fusiliers); c/o Messrs. Cox & Co., 16 Charing Cross, S.W.

1886. Millais, John Guille, F.Z.S.; Compton's Brow, Horsham, Sussex.

275 1903. Mills, The Rev. Henry Holroyd, M.A., F.Z.S.; The Rectory, St. Stephen-in-Brannel, Grampound Road, Cornwall.

1879. Mitchell, Frederick Shaw; Hornshaws, Millstream, B.C., Canada.

1901. Mitchell, P. Chalmers, M.A., D.Sc., LL.D., F.R.S., F.L.S., F.Z.S.; Secretary to the Zoological Society of London, Regent's Park, N.W.

1898. Monro, Horace Cecil, C.B.; Queen Anne's Mansions, Queen Anne's Gate, S.W.

1914. Moulton, John Coney, F.Z.S.; Curator of the Sarawak Museum, Sarawak, Borneo.

280 1912. Mouritz, L. Beresford; Kuyura, Dalby, Queensland, Australia.

1886. Muirhead, George, F.R.S.E.; Speybank, Fochabers, Morayshire.

Date of Election.

1893. Mullens, Major William Herbert, M.A., LL.M., F.Z.S.; Westfield Place, Battle, Sussex.

1892. Munn, Philip Winchester, F.Z.S.; Laverstoke, Whitchurch, Hants.

1897. Munt, Henry, F.Z.S.; 10 Ashburn Place, South Kensington, S.W. *(Committee.)*

285 1911. Murray, Edward Mackenzie; Woodside, Coupar-Angus, Perthshire.

1910. Murray, Herbert Willaume, F.Z.S.; The Old House, Epsom, Surrey.

1900. Musters, John Patricius Chaworth, D.L., J.P.; Annesley Park, Nottingham.

1907. Neave, Sheffield Airey, M.A., B.Sc., F.Z.S.; 2 Ryder Street, St. James', S.W.

1882. Nelson, Thomas Hudson; Seafield, Redcar, Yorkshire.

290 1895. Nesham, Robert, F.Z.S., F.E.S.; Utrecht House, Poynder's Road, Clapham Park, S.W.

1904. Newman, Thomas Henry, F.Z.S.; Newlands, Harrowdene Road, Wembley, Middlesex.

1902. Nichols, John Bruce, F.Z.S.; Parliament Mansions, Victoria Street, S.W.

1900. Nichols, Walter Buchanan; Stour Lodge, Bradfield, Manningtree, Essex.

1876. Nicholson, Francis, F.Z.S.; The Knoll, Windermere, Westmoreland.

295 1902. Nicoll, Michael John, F.Z.S.; Valhalla House, Zoological Gardens, Giza, Egypt.

1904. Noakes, Wickham; Selsdon Park, Croydon, Surrey.

1892. Ogilvie, Fergus Menteith, M.A., F.Z.S.; The Shrubbery, 72 Woodstock Road, Oxford.

1890. Ogilvie-Grant, William Robert, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W. (*Committee*).

1889. Ogle, Bertram Savile; Hill House, Steeple Aston, Oxford.

300 1907. Oldham, Charles, F.Z.S.; Kelvin, Boxwell Road, Berkhamsted, Herts.

1906. Osmaston, Bertram Beresford (Imperial Forest Service); 108 Banbury Road, Oxford.

1913. Owen, John Hugh; Old School House, Felsted, Essex.

1883. Parker, Henry, C.E.; 26 St. George's Road, St. Annes-on-the-Sea, Lancs.

Date of Election.

1880. Parkin, Thomas, M.A., F.L.S., F.Z.S.; Fairseat, High Wickham, Hastings, Sussex.

305 1908. Paton, Edward Richmond, F.Z.S.; Brookdale, Grassendale, near Liverpool, Lancs.

1891. Patterson, Robert, F.L.S., M.R.I.A.; Glenbank, Holywood, Co. Down, Ireland.

1911. Patterson, William Harry; 25 Queen's Gate Gardens, S.W.

1904. Pearse, Theed; 510 Duncan Building, 119 Pender Street, W., Vancouver, British Columbia.

1894. Pearson, Charles Edward, F.L.S.; Hillcrest, Lowdham, Notts.

310 1902. Pease, Sir Alfred Edward, Bt., F.Z.S.; Pinchinthorpe House, Guisborough, Yorkshire; and Brooks's Club, St. James's Street, S.W.

1898. Penn, Eric Frank; 42 Gloucester Square, W.

1891. Penrose, Francis George, M.D., F.Z.S.; Athenæum Club, Pall Mall, S.W.

1900. Percival, Arthur Blayney, F.Z.S.; Sports Club, St. James' Square, S.W.

1912. Pershouse, Capt. Stanley (1st Border Regt.); The Castle, Carlisle.

315 1886. Phillips, Ethelbert Lort, F.Z.S.; 79 Cadogan Square, S.W.

1893. Pigott, Sir Thomas Digby, K.C.B.; The Lodge, Lower Sheringham, Norfolk.

1914. Pitman, Charles Robert Senhouse (Lieut. 27th Punjabis); Drewton, Chelston, Torquay.

1908. Player, W. J. Percy; The Quarr, Clydach, R.S.O., Glamorganshire.

1907. Pocock, Reginald Innes, F.R.S., F.L.S., F.Z.S.; Superintendent of the Zoological Gardens, Regent's Park, N.W.

320 1905. Pollard, Capt. Arthur Erskine St. Vincent (The Border Regiment); Haynford Hall, Norwich, Norfolk.

1896. Popham, Hugh Leyborne, M.A.; Hunstrete House, Pensford, near Bristol, Gloucestershire.

1898. Price, Athelstan Elder, F.Z.S.; 4 Mincing Lane, E.C.

1903. Proctor, Major Frederick William (late West Riding Regt.); Downfield, Maidenhead, Berks.

1901. Proud, John T.; Dellwood, Bishop Auckland, Durham.

325 1893. Pycraft, William Plane, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W.

Date of Election.

1903. Ralfe, Pilcher George; The Parade, Castletown, Isle of Man.

1903. Ratcliff, Frederick Rowlinson; 29 Connaught Square, W.

1879. Rawson, Herbert Evelyn; Comyn Hill, Ilfracombe, N. Devon.

1894. Read, Richard Henry, M.R.C.S., L.R.C.P.; Church Street, Hanley, Staffordshire.

330 1888. Read, Robert H.; 8*a* South Parade, Bedford Park, W.

1877. Reid, Capt. Philip Savile Grey (late R.E.); The Elms, Yalding, Maidstone, Kent.

1903. Renaut, William E.; 34 Marylebone Road, N.W.

1908. Richardson, Norman Frederic, F.R.G.S.; Lynndale, Manor Road, Forest Hill, S.E.

1907. Richmond, Herbert William; King's College, Cambridge.

335 1895. Rickett, Charles Boughey, F.Z.S.; 27 Kendrick Road, Reading, Berks.

1896. Rippon, Lt.-Col. George, F.Z.S.; 89th Punjabis, P.O. Kalaw, Southern Shan States, Upper Burma.

1907. Ritchie, Archibald Thomas Ayres; Magdalen College, Oxford; and Overstrand, near Cromer, Norfolk.

1902. Rivière, Bernard Beryl, F.R.C.S.; St. Giles's Plain, Norwich, Norfolk.

1898. Robinson, Herbert C., C.M.Z.S.; Selangor State Museum, Kuala Lumpur, Federated Malay States.

340 1912. Robinson, Herbert William, F.Z.S.Scot.; Patchetts, Caton, near Lancaster.

1896. Rogers, Lt.-Col. John Middleton, D.S.O., F.Z.S. (late 1st Dragoons); Riverhill, Sevenoaks, Kent.

1913. Rogers, Reginald Nankivell; Carwinion, near Falmouth, Cornwall.

1893. Rothschild, The Hon. Lionel Walter, D.Sc., Ph.D., F.R.S., F.Z.S.; The Zoological Museum, Tring, Herts.

1894. Rothschild, The Hon. Nathaniel Charles, M.A., F.Z.S.; Arundel House, Kensington Palace Gardens, W.

345 1910. Rücker, Sir Arthur William, M.A., D.Sc., LL.D., F.R.S.; Everington House, Newbury, Berks.

1907. Russell, Conrad George Edward, F.Z.S.; 2 Audley Square, W.

1910. Russell, Harold, F.Z.S.; 16 Beaufort Gardens, Chelsea, S.W.

1883. St. Quintin, William Herbert, F.Z.S.; Scampston Hall, Rillington, Yorkshire.

Date of Election.

1903. Sandeman, Capt. Robert Preston (late 10th Hussars); Dan-y Parc, Crickhowell, S. Wales.

350 1889. Sapsworth, Arnold Duer, F.Z.S.; 1 St. James's Place, S.W.; and 30 Sussex Place, Regent's Park, N.W.

1902. Sargeaunt, Arthur St. George; Exbury, Padstow, Cornwall.

1904. Sargent, James; 76 Jermyn Street, S.W.

1914. Sauer, Dr. Hans, F.Z.S.; Bath Club, Dover Street, W.

1902. Saunders, William Henry Radcliffe, C.E., F.Z.S.; c/o Messrs. W. Saunders & Co. Ltd., 91 York Street, Westminster, S.W.

355 1909. Savage, The Rev. Ernest Urmson; 129 Upper Canning Street, Liverpool, Lancs.

1891. Sclater, William Lutley, M.A., F.Z.S.; 10 Sloane Court, Chelsea, S.W. (*Editor.*)

1907. Scott, The Rev. Canon Samuel Gilbert, M.A.; The Rectory, Havant, Hants.

1899. Selous, Frederick Courteney, F.Z.S.; Heatherside, Worplesdon, Surrey.

1908. Seppings, Capt. John William Hamilton; Army Pay Office, Canterbury, Kent.

360 1899. Serle, The Rev. William, M.A., B.D.; The Manse, Duddingston, Edinburgh.

1901. Seth-Smith, David, F.Z.S.; 34 Elsworthy Road, South Hampstead, N.W.

1904. Seth-Smith, Leslie Moffat, B.A., F.Z.S.; Alleyne Caterham Valley, Surrey.

1909. Seton, Malcolm Cotter Cariston; 13 Clarendon Road, Holland Park, W.; and Union Club, Trafalgar Square S.W.

1899. Sharman, Frederic, F.Z.S.; 47 Goldington Road, Bedford.

365 1865. Shepherd, The Rev. Charles William, M.A., F.Z.S.; Trottiscliffe Rectory, Maidstone, Kent.

1908. Smalley, Frederic William, F.Z.S.; Challan Hall, Silverdale, near Carnforth, Lancs.

1906. Snouckaert van Schauburg, Baron René Charles; Doorn, Holland.

1903. Sparrow, Major Richard, F.Z.S. (7th Dragoon Guards); Trimulgerry, Secunderabad, India.

1906. Stanford, Staff-Surgeon Charles Edward Cortis, B.Sc., M.B., R.N.; 94 Jermyn Street, S.W.

Date of Election.

370 1910. STANFORD, EDWARD FRASER; 9 Cumberland House, Kensington Court, W.

1913. STANFORD, HENRY MORRANT; 9 Cumberland House, Kensington Court, W.

1913. STANFORD, JOHN KEITH; 9 Cumberland House, Kensington Court, W.

1900. STARES, JOHN WILLIAM CHESTER; Portchester, Hants.

1902. STENHOUSE, JOHN HUTTON, M.B., R.N.; Craigievar, Keptie Road, Arbroath, Forfarshire.

375 1910. STEVENS, HERBERT; Gopaldhara, Nagri Spur, P.O., Sonada, Darjiling Himalayan Rly., India.

1906. STEWARD, EDWARD SIMMONS, F.R.C.S.; 10 Prince's Square, Harrogate, Yorks.

1914. STEWART, JOHN; Mainshill, Beith, Ayrshire.

1893. STONHAM, CHARLES, C.M.G., F.R.C.S., F.Z.S.; 4 Harley Street, Cavendish Square, W.

1896. STRANG-WATKINS, WATKIN, F.Z.S.; 33 Evelyn Gardens, S.W.; and Wellington Club, S.W.

380 1914. STRESEMANN, ERWIN; Residenzstrasse 42, Dresden, Germany.

1881. STUDDY, Col. ROBERT WRIGHT (late Manchester Regiment); Waddeton Court, Brixham, Devon.

1887. STYAN, FREDERICK WILLIAM, F.Z.S.; Stone Street, near Sevenoaks, Kent.

1914. SUTHERLAND, LEWIS ROBERT, M.B., C.M., Professor of Pathology, University of St. Andrews, N.B.; Wellgate House, West Newport, Fifeshire.

1907. SWANN, GEOFFREY; 11 Onslow Crescent, S.W.

385 1905. SWANN, HAROLD, F.Z.S.; 45 Brompton Square, S.W.

1887. SWINBURNE, JOHN; Haenertsburg, Transvaal, South Africa.

1882. SWINHOE, Col. CHARLES, M.A., F.L.S., F.Z.S.; 6 Gunterstone Road, W. Kensington, W.

1884. TAIT, WILLIAM CHASTER, C.M.Z.S.; Entre Quintas 155, Oporto, Portugal.

1911. TALBOT-PONSONBY, CHARLES GEORGE; 5 Crown Office Row, Temple, E.C.

390 1911. TATTON, REGINALD ARTHUR; Cuerden Hall, Bamber Bridge, Preston, Lancs.

1914. TAVISTOCK, HASTINGS WILLIAM SACKVILLE, Marquis of, F.Z.S.; Woburn Abbey, Bedfordshire.

Date of Election.

1905. Taylor, Lionel Edward, F.Z.S.; Bankhead, Kelowna, British Columbia.

1886. Terry, Major Horace A. (late Oxfordshire Light Infantry); Compton Grange, Compton, Guildford, Surrey.

1904. Thompson, Capt. William R., R.G.A.; Mouriaux House, Alderney, Channel Islands.

395 1911. Thomson, A. Landsborough, M.A.; Castleton House, Old Aberdeen, Aberdeen.

1900. Thorburn, Archibald, F.Z.S.; High Leybourne, Hascombe, near Godalming, Surrey.

1893. Thorpe, Dixon L.; Loshville, Etterby Scaur, Carlisle, Cumberland.

1903. Ticehurst, Claud Buchanan, M.A., M.D., M.R.C.S.; Grove House, Lowestoft, Suffolk.

1894. Ticehurst, Norman Frederic, M.A., M.B., F.R.C.S., F.Z.S.; 35 Pevensey Road, St. Leonards-on-Sea, Sussex.

400 1902. Townsend, Reginald Gilliat, M.A.; Buckholt, West Tytherley, Salisbury, Wilts.

1914. Treatt, Chaplin Court; 29 Fulham Park Gardens, S.W.

1893. Trevor-Battye, Aubyn, F.Z.S.; Ashford Chace, Petersfield, Hants.; and Royal Societies Club, St. James's Street, S.W.

1913. Tuckwell, Edward Henry, F.Z.S.; Berthope, Compton, near Guildford, Surrey.

1911. Tyrwhitt-Drake, Hugh Garrard, F.Z.S.; Cobtree, Sandling, Maidstone, Kent.

405 1864. Upcher, Henry Morris, F.Z.S.; Sheringham Hall, Cromer, Norfolk.

1907. Van Oort, Dr. Eduard Daniel; Museum of Natural History, Leyden, Holland.

1910. Van Someren, Dr. Robert Abraham Logan; Kampala, Uganda, British East Africa.

1912. Van Someren, Dr. Victor Gurnet Logan; Uganda Medical Staff, c/o Post Office, Nairobi, British East Africa.

1908. Vaughan, Matthew; Sunnylands, Milton, Pewsey, Wilts.

410 1906. Vaughan, Lieut. Robert E., R.N.; Lion Commercial Hotel Portsmouth.

1913. Venning, Capt. Francis Esmond Wingate (31st Punjabis); Pyawbwe, Burma.

1890. Venour, Stephen; Fern Bank, Altrincham, Cheshire.

Date of Election.

1884. Verey, Alfred Sainsbury; Heronsgate, near Rickmansworth, Herts.

1881. Verner, Col. William Willoughby Cole (late Rifle Brigade); Hartford Bridge, Winchfield, Hants.; and United Service Club, S.W.

415 1902. Wade, Edward Walter; Middelburg, North Ferriby, East Yorks.

1886. Wade-Dalton, Col. H. D.; Hauxwell Hall, Finghall, R.S.O., Yorkshire.

1895. Wallis, Henry Marriage; Ashton Lodge, Christchurch Road, Reading, Berks.

1914. Wall-Row, James; 67 Longridge Road, Earl's Court, S.W.

1899. Walton, Major Herbert James, M.D., F.R.C.S., C.M.Z.S., I.M.S.; Medical College, Lucknow, India.

420 1872. Wardlaw-Ramsay, Col. Robert George, F.Z.S.; Whitehill, Rosewell, Midlothian. (*President.*)

1903. Watt, Hugh Boyd, F.Z.S.; 12 Great James Street, Bedford Row, W.C.

1912. Wells, Charles Henry; Broomfield, 80 Brookhouse Hill, Fulwood, Sheffield, Yorks.

1912. Wenner, Max Victor; Woodside, Trafford Road, Alderley Edge, Cheshire.

1900. Westell, W. Percival, D.Sc., F.L.S., F.R.H.S.; Verulam, Icknield Way, Letchworth, Herts.

425 1913. Whistler, Hugh (Indian Police); c/o Messrs. King, King & Co., Bombay, India.

1891. Whitaker, Benjamin Ingham; Hesley Hall, Tickhill, Rotherham, Yorks.

1891. Whitaker, Joseph I. S., F.Z.S.; Malfitano, Palermo, Sicily.

1909. White, Henry Luke; Belltrees, Scone, New South Wales, Australia.

1912. White, Capt. Samuel Albert; Wetunga, Fulham, South Australia.

430 1903. White, Stephen Joseph, F.Z.S.; Merok, Chiltern Road, Chesham Bois, Chesham, Bucks.

1903. Whitehead, Capt. Charles Hugh Tempest; Deighton Grove, York.

1897. Whymper, Charles, F.Z.S.; 11 Orange Street, Haymarket, S.W.

Date of Election.

1912. Whymper, Samuel Leigh; Oxford Mansions, Oxford Street, W.; and Oriental Club, Hanover Square, W.

1914. Wickham, Percy Frederic; c/o Messrs. Thos. Cook & Son, Rangoon, Burma.

435 1898. Wiglesworth, Joseph, M.D., F.R.C.P.; Springfield House, Winscombe, Somerset.

1894. Wilkinson, Johnson; St. George's Square, Huddersfield, Yorkshire.

1912. Wilkinson, William Arthur, F.Z.S.; Dumcrieff, Tudor Hill, Sutton Coldfield, Warwickshire.

1897. Wilson, Allan Read, B.A., M.B., B.Ch.; Eagle House, Blandford, Dorset.

1888. Wilson, Charles Joseph, F.Z.S.; 34 York Terrace, Regent's Park, N.W.

440 1887. Wilson, Scott Barchard, F.Z.S.; Heatherbank, Weybridge Heath, Surrey.

1897. Witherby, Harry Forbes, F.Z.S.; 3 Cannon Place, Hampstead, N.W.

1908. Witherington, Gwynne; Aberlash, Sonning, Berks.

1899. Wollaston, Alexander Frederick Richmond, B.A.; 15 Montpelier Square, S.W.

1912. Wood, Martin Stanley, M.D.; Cheadle Royal, Cheadle, Cheshire.

445 1912. Woodhouse, Cecil, M.D.; Chetnole, Sherborne, Dorset.

1909. Woosnam, Richard Bowen, C.M.Z.S.; Game Warden's Office, Nairobi, British East Africa.

1902. Workman, William Hughes; Lismore, Windsor, Belfast, Ireland.

1912. Wormald, Hugh; Heathfield, Dereham, Norfolk.

1904. Wright, William Crawford; Roslyn, Marlborough Park, N., Belfast, Ireland.

450 1908. Wynne, Richard Owen; Langley Mount, Watford, Herts.

1895. Yerbury, Lt.-Col. John William (late R.A.), F.Z.S.; 2 Ryder Street, St. James's, S.W.; and Army and Navy Club, S.W.

1889. Young, Capt. James B., R.N.; Tytherley, Wimborne, Dorset.

Extra-Ordinary Member.

1899. Godwin-Austen, Lt.-Col. Henry Haversham, F.R.S., F.Z.S.; Nore, Hascombe, Godalming, Surrey.

Honorary Members.

Date of Election.

1907. Allen, Joel Asaph, Ph.D., F.M.Z.S.; American Museum of Natural History, Central Park, New York, U.S.A.

1890. Berlepsch, Graf Hans von, C.M.Z.S.; Schloss Berlepsch, Post Gertenbach, Witzenhausen, Germany.

1914. Bianchi, Dr. Valentine; Imperial Zoological Museum, St. Petersburg, Russia.

1872. Finsch, Prof. Dr. Otto, C.M.Z.S.; Leonhardplatz 5, Brunswick, Germany.

5 1898. Goeldi, Prof. Dr. Emil A., C.M.Z.S.; Zieglerstrasse 36, Berne, Switzerland.

1893. Reichenow, Dr. Anton, C.M.Z.S.; Museum für Naturkunde, Invalidenstrasse, Berlin, Germany.

1903. Ridgway, Robert, C.M.Z.S.; Smithsonian Institution, Washington, D.C., U.S.A.

1890. Salvadori, Count Tommaso, M.D., F.M.Z.S.; Royal Zoological Museum, Turin, Italy.

1914. Schalow, Prof. Herman; Hohenzollerndamm 50, Berlin-Grunewald, Germany.

Honorary Lady Members.

1910. Bate, Miss Dorothy M. A.; Bassendean House, Gordon, Berwickshire.

1911. Baxter, Miss Evelyn Vida; Roslea, Kirkton of Largo, Fifeshire.

1910. Bedford, Mary, Duchess of, F.Z.S.; Woburn Abbey, Beds.

1910. Lemon, Mrs. Margaretta Louisa, F.Z.S.; Hillcrest, Redhill, Surrey.

5 1911. Rintoul, Miss Leonora Jeffrey; Lahill, Largo, Fifeshire.

1910. Turner, Miss Emma Louisa, F.Z.S.; The Old Rectory, Girton, Cambridge.

Colonial Members.

1904. Campbell, Archibald James; Custom House, Melbourne, Australia.

1908. Farquhar, John Henry Joseph, B.Sc., N.D.A.; Assistant Conservator of Forests, Calabar, Southern Nigeria, West Africa.

1910. Fleming, James H., C.M.Z.S.; 267 Rusholme Road, Toronto, Canada.

Date of Election.

1909. Haagner, Alwin Karl, F.Z.S.; Zoological Gardens, Box 754, Pretoria, South Africa.

5 1908. Hall, Robert, F.L.S., C.M.Z.S.; c/o Tasmanian Museum, Hobart, Tasmania.

1914. Leach, John Albert, M.A., D.Sc.; c/o Education Department, Melbourne, Australia.

1903. Legge, Col. W. Vincent; Cullenswood House, St. Mary's, Tasmania.

1905. Macoun, John, M.A., F.R.S.C.; Naturalist to the Geological Survey of Canada, Ottawa, Canada.

1903. North, Alfred J., C.M.Z.S.; Australian Museum, Sydney, New South Wales, Australia.

10 1907. Swynnerton, Charles Francis Massy, F.L.S.; Gungunyana, Melsetter, South Rhodesia.

Foreign Members.

1909. Alphéraky, Sergius N.; Imperial Academy of Science, St. Petersburg, Russia.

1880. Bureau, Louis, M.D.; École de Médecine, Nantes, France.

1906. Büttikofer, Dr. Johannes, C.M.Z.S.; Director of the Zoological Garden, Rotterdam, Holland.

1906. Buturlin, Sergius A.; Wesenberg, Esthonia, Russia.

5 1902. Chapman, Frank Michler; American Museum of Natural History, Central Park, New York, U.S.A.

1875. Doria, Marchese Giacomo, F.M.Z.S.; Strada Nuova 6, Genoa, Italy.

1914. Hellmayr, Carl E.; Wittelsbacherstrasse 2 III., Munich, Germany.

1902. Ihering, Dr. Herman von, C.M.Z.S.; Museu Paulista, São Paulo, Brazil.

1914. Lönnberg, Prof. Dr. A. J. Einar, F.M.Z.S.; Director of the Zoological Museum, Stockholm, Sweden.

10 1886. Madarász, Dr. Julius von; National Museum, Budapest, Hungary.

1903. Martorelli, Prof. Dr. Giacinto; Museo Civico di Storia Naturale, Milan, Italy.

1894. Menzbier, Prof. Dr. Michael, C.M.Z.S.; University for Women, Devitchje, Pola, Moscow, Russia.

1905. Oberholser, Harry Church; Biological Survey, Department of Agriculture, Washington, D.C., U.S.A.

Date of Election.

1900. Reiser, Dr. Otmar; Landes Museum, Sarajevo, Bosnia, Austria.

15 1908. Richmond, Charles Wallace; United States National Museum, Washington, D.C., U.S.A.

1900. Stejneger, Leonhard, C.M.Z.S.; Smithsonian Institution, Washington, D.C., U.S.A.

1914. Stone, Dr. Witmer; Academy of Natural Sciences, Philadelphia, Pa., U.S.A.

1902. Sushkin, Dr. Peter, C.M.Z.S.; Zootomical Cabinet and Museum, The University, Kharkov, Russia.

1911. Tschusi zu Schmidhoffen, Victor, Ritter von; Villa Tännenhof, bei Hallein, Salzburg, Austria.

20 1896. Winge, Herluf, C.M.Z.S.; University Zoological Museum, Copenhagen, Denmark.

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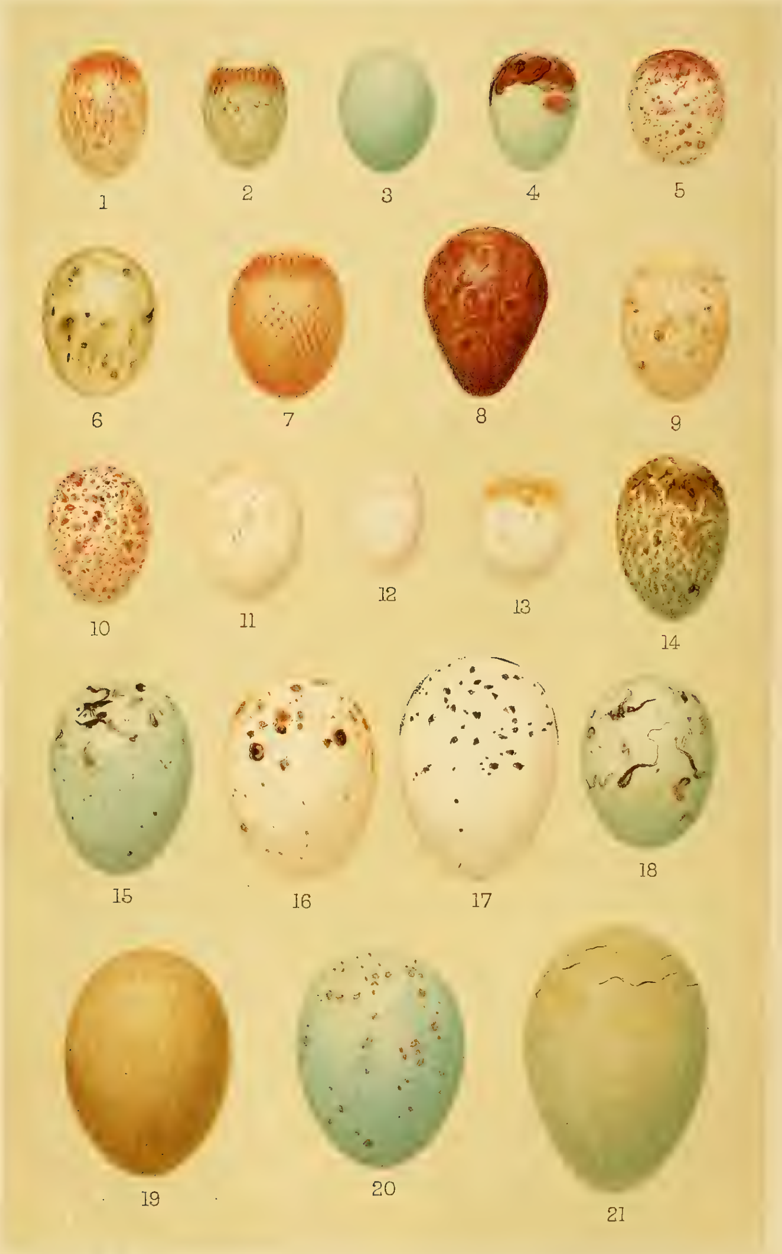
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EGGS OF INDIAN BIRDS.

THE IBIS.

TENTH SERIES.

No. V. JANUARY 1914.

I.—*Notes on the Nidification of some Birds from Burma.*

By Major H. H. Harington, Indian Army.

(Plate I.*)

The nesting of the following species is, I believe, not mentioned in Hume's 'Nests and Eggs,' though most of the cases have been recorded by me from time to time in the Journal of the Bombay Natural History Society.

A great number of the nests were found at the little hill-station of Sinlum-Kaba, situated at an altitude of about 6000 feet in the hills, 30 miles due east of Bhamo, Upper Burma. Others were found at Maymyo at about 3500 feet. This hill-station is situated on the edge of the Shan Plateau, 48 miles east of Mandalay.

I have used the following abbreviations :—

Fauna = The Fauna of British India, Birds.
Bombay Journ. = Journal of the Bombay Natural History Society.
Bull. B. O. C. = Bulletin British Ornithologists' Club.
Ann. Mag. N. H. = Annals & Magazine of Natural History.
Vög. pal. Fauna = Hartert, die Vögel der paläarktischen Fauna.

Pica pica sericea.

Pica rustica (Scop.); Oates, Fauna, i. 1889, p. 24; Harington, Bombay Journ. xiv. 1902, p. 596, xix. 1909, p. 108.

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* For explanation of the Plate see p. 26.

Pica pica sericea Gould; Hartert, Vög. pal. Fauna, i. 1903, p. 22.

The Chinese Magpie is common in the valleys of the southern Shan States, east of Fort Stedman, and in the Bhamo district on the Chinese frontier, two or three couples occurring round the station of Bhamo itself. I believe it also is common in the Ruby Mines district, round Mogôk. Its nest, which is similar to that of the English subspecies, is generally very conspicuous, and seems to be repaired from year to year, sometimes being very massive. On the frontier, where trees are very scarce, I once saw more than a dozen nests in one tree. It is an early breeder, laying in February and March, five and six being the usual complement of eggs. Both in the Shan States and in the Bhamo district, where crows are not plentiful, I have taken the eggs of the Koel (*Eudynamis honorata*) from the nest of the Chinese Magpie.

The eggs of this species are very similar to those of the English Magpie, but seem to me rather larger.

Average of eleven eggs = 1·45 × ·98.*
Largest = 1·5 × ·95.
Smallest = 1·38 × 1·0.

Garrulus leucotis. (Plate I. figs. 19, 21.)

Garrulus leucotis Hume; Oates, Fauna, i. 1889, p. 39; Harington, Bombay Journ. xviii. 1908, p. 686; xx. 1911, p. 1003; xxi. 1912, p. 585.

I have recorded the nesting of the Burmese Jay in the above numbers of the Bombay Journal. It is widely distributed along the eastern side of Burma, from Tenasserim in the south, through Karennee and the Shan States up to the Bhamo district, where I procured a specimen near the Chinese frontier. It seems very partial to oak forests, and round Maymyo, where the jungles consist almost entirely of oak and chestnut, it is particularly common.

In April, 1910, I was ordered up to Maymyo, and on the 13th, during the march up, I found my first nest of

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* All measurements are in inches.

G. leucotis. This was placed in a small sapling at about ten feet from the ground, and contained three incubated eggs; the old bird was sitting very close, and only flew off when we attempted to reach the nest. On the 30th, we came across a regular breeding colony of Jays, finding many old nests, and four containing eggs. A few days later I again visited the same strip of jungle, going through it almost tree by tree, and was rewarded in finding more nests containing both young birds and eggs. The next year I again took toll of the same colony: this, however, seems to have been too much for them, as I found that they had deserted the spot the following year. I never came across another colony, but found several nests with eggs, many of these having old nests near them; this shows that the Burmese Jay is very partial to nesting in the same locality, and occasionally breeds in small communities.

During the breeding season they are very silent birds, and are rarely to be seen in the vicinity of a nest; later on in the year they congregate in large family parties and are very noisy. The hen bird generally sits very close, often not leaving the nest until it is actually touched, when she glides quietly away. The breeding season seems to last through the whole of April and well on into May, but they are very irregular breeders, as I have found nests with fully-fledged young birds close to others containing fresh eggs. The number of eggs in a clutch also varies a great deal, as I have taken nests containing 2, 3, 4, and 5 incubated eggs. Many of these were addled, one clutch of five being all in this condition.

The most common site for a nest seems to be a small sapling; I have also found them placed in the forks of small trees, and against the trunks of large ones; a few were found in bushes, and three on stumps of trees, from three to four feet from the ground. Two nests containing eggs were found in the colony, within eleven paces of each other.

The nest consists of a rough outline of coarse twigs, inside which is a deep compact cup-shaped lining composed entirely of grass-roots.

The eggs are like those of other members of the family, and vary greatly in size and colour, some being a pale green, uniformly covered all over with minute dark olive-brown specks, these often forming a darker zone round the larger end, others are again distinctly spotted with the same colour; many also have black hair-like streaks, but these are very liable to wash off unless one is careful.

Average of fourteen eggs = 1·3 × ·95.
Largest = 1·43 × ·97.
Smallest = 1·2 × ·92.

Parus major commixtus.

Parus minor Temm. & Schleg.; Oates, Fauna, i. 1889, p. 48; Harington, Bombay Journ. xix. 1909, p. 109; xx. 1911, p. 1005.

Parus major commixtus Swinhoe; Hartert, Vög. pal. Fauna, i. 1903, p. 346.

The Chinese Grey Tit is the common Tit of the hills on the eastern side of Burma. I have never met with it in the plains, where *P. atriceps* occurs sparingly.

It has all the notes and habits of the English Great Tit, and is especially common in the oak forests and round the station of Maymyo itself. At Sinlum in the Bhamo Hills I found it nesting in holes in banks along the roadside, but at Maymyo always in holes of trees. Although such a common little bird, its nest, unless one watches it while building, is very difficult to find. Once out riding I spotted a Tit hurriedly leave a stump, which on investigation disclosed a nest containing six eggs. As I was unable to take it then, I thought I would make matters safe by stopping up the hole with leaves, as I had found by bitter experience that a nest once examined was very often robbed and destroyed before my next visit: whether this is the work of magpies and jays, or squirrels, I have never discovered. So on this occasion I thought I had thoroughly protected the eggs, but on returning next day and cutting into the nest, I found that I had been again forestalled, this time by a swarm of large black ants, which had destroyed all the eggs, barely leaving any shells behind.

The nest is of the usual type, a pad of moss lined with a few feathers, and a great deal of fur and hair. The eggs are also of the family type, white, profusely spotted with rusty red. Four to seven seem to be the general number laid.

The Maymyo eggs run larger than the Sinlum ones.

Average of seven Maymyo eggs = ·71 × ·5.
Largest = ·73 × ·52.
Smallest = ·70 × ·5.
Average of four Sinlum eggs = ·63 × ·51.
Largest = ·65 × ·51.
Smallest = ·6 × ·5.

Ægithaliscus erythrocephalus talifuensis. (Plate I. fig. 12.)

Ægithaliscus talifuensis Rippon, Bull. B. O. C. xiv. 1903, p. 18; Harington, Bombay Journ. xix. 1909, p. 110.

The Yunnanese Long-tailed Tit is fairly plentiful in the Bhamo Hills, and was originally described by Col. Rippon from Yunnan. It is an early breeder at Sinlum, and I think must have two broods, as during April and May I saw several family parties about. On the 28th of April, 1908, after having watched and hunted in vain for over a week, I was rewarded in finding a nest containing three eggs; this was placed between the stems of a wild raspberry bush, and at about two feet from the ground. It was a beautiful little miniature Long-tailed Tit's nest, composed on the outside entirely of moss, and lined with fine vegetable down, inside which was an inner lining of feathers. I also found another nest in the process of building, which seems to be a very lengthy operation, as I watched it for over a fortnight. When at last I thought it would be complete I again visited it, hoping to get another clutch of eggs, but I found I had been again forestalled, as the nest was completely destroyed, as well as another I was watching close by.

The eggs are a pure glossless white, with a zone of minute reddish spots round the larger end.

Average of three eggs = ·55 × ·44.
Largest = ·57 × ·44.
Smallest = ·52 × ·44.

Suthora brunnea. (Plate I. fig. 3.)

Suthora brunnea Anderson; Oates, Fauna, i. 1889, p. 68 footnote; Harington, Bombay Journ. xvi. 1906, p. 740; xix. 1909, p. 111.

Anderson's Crow-Tit is a very common little bird in the Bhamo Hills, above about 5000 feet. I first found its nest in May, 1905, when I visited Sinlum; again in 1908 I found it very plentiful and got several nests. They are very noisy little birds when anyone approaches their nesting-site, and unless the bird is actually seen quitting its nest, it is almost impossible to find the nest, so well is it concealed. I found the best plan was to mark any spots where birds had been particularly anxious, and to return quietly later on, when in all probability the bird would be seen hurriedly leaving. The nests are generally placed well down in a clump of grass or reeds, within about two feet of the ground; occasionally they are built on brambles in long grass. They are very compact and cup-shaped, composed of grass and bamboo leaves with a little moss, and lined with fine grass and horse-hair. Three, rarely two or four, seem to be the complement of eggs, which are of a pale spotless blue.

Average of nine eggs = ·64 × ·52.
Largest = ·69 × ·53.
Smallest = ·60 × ·50.

Dryonastes sannio.

Dryonastes sannio (Swinhoe); Oates, Fauna, i. 1889, p. 76; Stuart Baker, Ibis, 1906, p. 90.

The White-browed Laughing-Thrush is the commonest bird of this family along the eastern hills of Burma, being equally plentiful at Sinlum, Maymyo, and in the southern Shan States in general, from 3000 feet upwards. Its nest and eggs have been described by Mr. Stuart Baker from Assam, and by myself and others from Burma, in the Bombay Journal. A most interesting fact, however, about this bird's eggs is the different types it lays, a point not alluded to by Mr. Stuart Baker. They vary from a pale blue-green to a skim-milk white, and to a glossy china-white, many of the latter having rough lines encrusted on their surface. The eggs have an unmistakable shape, looking as if they had been suddenly blunted at the smaller end.

Average of ten eggs = 1·04 × ·75.
Largest = 1·08 × ·76.
Smallest = ·97 × ·76.

Dryonastes cærulatus kaurensis.

Dryonastes kaurensis Rippon, Bull. B. O. C. xii. 1901, p. 13; Harington, Bombay Journ. xix. 1909, p. 111.

The Kachin Hills Laughing-Thrush was first described by Col. Rippon from the Kachin Hills east of Bhamo, where I found it fairly plentiful at about 6000 feet. It has a very fine whistling call, which can be easily imitated, and to which the bird readily answers. I only managed to get one nest, which was found by my Burman collector, the parent bird also being secured. The nest was placed in a clump of small mountain bamboos, and was of the usual Laughing-Thrush type, being composed entirely of bamboo leaves, and lined with fine grass. It contained two incubated eggs of a bright glossy blue, matching in colour those of *Garrulax pectoralis*, but they are rather long and pointed, measuring 1·26 × ·48.

Trochalopterum milnei sharpei. (Plate I. figs. 16, 17.)

Trochalopterum sharpei Rippon, Bull. B. O. C. xii. 1901, p. 13; Harington, Bombay Journ. xix. 1909, p. 113.

Sharpe's Laughing-Thrush is the handsomest bird of this numerous family, which is so well represented in the Kachin Hills. It is a great skulker, and only found in dense undergrowth in valleys over 6000 feet. My first nest was procured by my Burman collector, who also shot the parent bird. As these eggs differed from those of any other Laughing-Thrush I had ever seen or heard of, and were of a totally different type, I thought he must have made some mistake. On the 29th of April, 1908, I luckily found a nest containing three eggs of the same description as those taken by him, so I promptly concealed myself, and managed to shoot both parent birds, who were very noisy and inquisitive.

After this I found other nests and procured the parent birds with them, so there can be no doubt that *T. sharpei* lays eggs of a totally different type, so far as is known at present, from those of any other member of the same family.

The nests were of the usual type, composed of bamboo leaves and grass, and were placed in bushes or against the side of trees. The eggs, of which two or three seem to be the usual complement, are very remarkable, being a dead white, either glossless or having a faint gloss, and are spotted either with dark red or black spots, a few having underlying purplish marks; in fact they are extremely like Orioles' eggs, though the texture is somewhat less smooth and close.

Average of eight eggs = 1·13 × ·82.
Largest = 1·3 × ·8.
Smallest = 1·0 × ·8.

Trochalopterum phœniceum ripponi. (Plate I. fig. 15.)

Trochalopterum ripponi Oates, Bull. B. O. C. xi. 1900, p. 10; Harington, Bombay Journ. xix. 1909, p. 114.

Rippon's Laughing-Thrush was first described from the southern Shan States, and is fairly common in the Bhamo Hills, above 5000 feet. It is very noisy and a great skulker, but being very inquisitive is easily called up and shot. It builds a compact nest of the usual type, which it places from three to five feet from the ground in a sapling, thorn-bush, or clump of bamboos, and generally lays three eggs, occasionally only two; these are similar to those of *T. phœniceum*, being a beautiful pale blue, spotted and streaked with numerous fine curly lines of a dark red.

Average of six eggs = 1·01 × ·75.
Largest = 1·1 × ·72.
Smallest = 1·0 × ·76.

Babax lanceolatus victoriæ.

Babax victoriæ Rippon, Bull. B. O. C. xv. 1905, p. 97; Venning, Bombay Journ. xxi. 1912, p. 622.

The nest of the Mt. Victoria Babbler was procured, together with the parent bird, by Capt. F. E. W. Venning, who kindly gave both to me. I quote his description from the Bombay Journal. The nest was found at Haka, 6000 feet up in the Chin Hills.

"One nest found on the 13th of April. It was an open cup composed of dead leaves and thick grass stems, lined with fine root-fibres, placed about two feet above the ground, between the stems of a small thorny bush at the head of a little swamp. The interior diameter of the nest was 3½ inches, with a depth of 1½ to 2 inches. When found there was only one egg; a second was laid on the 14th, after which the bird was continually on the nest till the 18th, when it was shot and the nest taken."

The eggs are of a pure turquoise blue, measuring "1·2 × ·86 and 1·19 × ·83."

Babax lanceolatus yunnanensis.

Babax yunnanensis Rippon, Bull. B. O. C. xv. 1905, p. 96; Harington, Bombay Journ. xix. 1909, p. 112.

The Yunnan Babbler was first described by Col. Rippon from Yunnan, and seems to me to be identical with *B. l. lanceolatus.* I met with it in the Bhamo Hills, between 5000 and 6000 feet. It prefers the more open hill-sides, which are covered with bracken and bramble bushes, and never enters the dense secondary growth which springs up after cultivation. From the description of their plumage and habits, and from the colour of their eggs, the genus *Babax* seems to me more nearly allied to *Crateropus* than to the Laughing-Thrushes of the genera *Garrulax* and *Dryonastes.*

Nests found during May were of the usual Babbler type, and were placed in bushes and brambles quite close to the ground. The eggs, of which three or four seem to be the usual number, are a deep glossy blue of the regular *Crateropus*- and *Argya*-colouring, and are similar in colour to those of the last-named species, *B. l. victoriæ.*

Average of nine eggs = 1·06 × ·8.
Largest = 1·14 × ·85.
Smallest = 1·04 × ·75.

Argya gularis.

Argya gularis (Blyth); Oates, Fauna, i. 1889, p. 107; Macdonald, Bombay Journ. xvii. 1906, p. 185.

Although the White-throated Babbler is such an extremely common bird in the dry zone of Upper Burma, the only mention of its nesting I can find is that of Mr. K. C. Macdonald in the above quoted Journal.

The "seven-sisters," as these birds and their nearest relatives are popularly called from their habit of always going about in family parties, are very familiar birds, being found alike around houses and villages, as well as in the jungles. They seem to breed almost throughout the year, but more especially during the hot weather, in March and April, building their nests in any convenient bush or clump of bamboos, even taking advantage of the trellis-work round verandahs. If the nest is in an exposed situation—and it is often placed in leafless bushes, it is a very flimsy cup-shaped affair of grass, through which the eggs are easily visible; if placed in a well concealed spot it is more substantial and compact. Three or four eggs of the beautiful dark blue shade peculiar to the family are laid.

Average of seven eggs = ·88 × ·68.
Largest = ·93 × ·7.
Smallest = ·85 × ·67.

Pomatorhinus macclellandi gravivox.

Pomatorhinus gravivox David; Oustalet, Bull. Mus. Paris, 1898, p. 255; Harington, Bombay Journ. xix. 1909, p. 115.

David's Scimitar-Babbler is another Chinese species, which just finds its way across the border to within Indian limits, and is fairly common in the hills east of Bhamo, at about 6000 feet; it seems to prefer the more or less open hill-sides to the dense evergreen jungles. I found several nests; all were placed on or near the ground, and were untidy dome-shaped structures composed of grass and leaves. They seem to be early breeders for those parts, as the first nest I found early in April contained two eggs on the point of hatching, and a little later in the month there were several young birds about.

Two or three seem to be the usual number of eggs laid; they are of a pure glossless white.

Average of nine eggs = 1·07 × ·87.
Largest = 1·17 × ·87.
Smallest = 1·03 × ·8.

Drymocataphus ignotus cinnamomeus. (Plate I. fig. 7.)

Drymocataphus cinnamomeus Rippon, Bull. B. O. C. xi. 1900, p. 12; Harington, Bombay Journ. xix. 1909, p. 115.

Rippon's Babbler was first described by him from the southern Shan States. I found it a decidedly rare bird in the Bhamo Hills at 6000 feet, only meeting with it twice, and finding only one nest; it is a shy bird inhabiting dense undergrowth, and for this reason may be commoner than it seems. The nest was dome-shaped, compactly made of woven grass, and placed near the ground in long grass under some overhanging bamboos. It contained three eggs, of a pinkish ground-colour, profusely speckled all over with pinkish red, which formed a zone round the larger end; they measure ·84 × 56.

Alcippe nepalensis fratercula.

Alcippe fratercula Rippon, Bull. B. O. C. xi. 1900, p. 11; Harington, Bombay Journ. xix. 1909, p. 116.

The Shan Hills Babbler, like the last, was first described by Colonel Rippon from the southern Shan States.

On carefully going through all the specimens of *A. nepalensis* (Hodgson) in the Natural History Museum, I find that the only ones from Burma which agree with *A. nepalensis* from Assam, are those collected in the Chin Hills by Colonel Rippon, while all the other so-called specimens of *nepalensis* from Burma are *fratercula*.

The distribution of these two sub-species is therefore:—

A. nepalensis nepalensis: Nepal, Darjeeling, Bootan, Assam, Munipur, Naga Hills and Chin Hills.

A. nepalensis fratercula: Bhamo Hills, Shan States, Karennee, Toungoo Hills, Tenasserim and Tavoy.

Although *A. n. fratercula* is so widely distributed in Burma, I only succeeded in finding its nests at Sinlum in the Bhamo

Hills. These were all placed in bushes within three or four feet of the ground; they were cup-shaped, and composed of fern leaves and grass, lined with some red fibre. Three nests were found in April and May at Sinlum, one containing four, and two, containing each two incubated eggs. These were all of the same type, having a white ground-colour, spotted all over with numerous rusty-red spots. Mr. Stuart Baker informs me he has received others from Burma, which have all the typical variations of those of *A. nepalensis* from Assam. Eggs from Bhamo measure from ·87 × ·58 to ·77 × ·57.

Stachyrhidopsis ruficeps bhamoensis. (Plate I. fig. 13.)

Stachyridopsis bhamoensis Harington, Ann. Mag. N. H. (8) ii. 1908, p. 245; id., Bombay Journ. xix. 1909, p. 116.

This Red-capped Babbler is a very common little bird in the Bhamo Hills, and inhabits dense undergrowth; it is very noisy and fussy during the breeding season, if any one invades its own particular bit of jungle. It builds an untidy retort-shaped nest entirely of bamboo leaves; this is well concealed in a clump of overhanging long grass, and unless the bird is actually seen leaving, almost impossible to find. I came across several nests at the end of April and beginning of May. The eggs are a pure white with a few pale reddish spots which more or less form a zone round the larger end; occasionally pure white eggs are laid. Three seem to be the usual number in one nest, but sometimes four are met with.

Average of seven eggs = ·65 × ·52.
Largest = ·69 × ·5.
Smallest = ·61 × ·55.

Schœniparus dubius intermedius. (Plate I. figs. 6, 9.)

Schœniparus intermedius Rippon, Bull. B. O. C. xi. 1900, p. 11; Harington, Bombay Journ. xix. 1909, p. 117.

Rippon's Tit-Babbler was first described from the southern Shan States; the birds from the Bhamo Hills are intermediate between *S. mandelli* and *S. intermedius*, but much nearer the latter. They are very plentiful in the Bhamo Hills, building a loose dome-shaped nest, on or near the ground; this is composed of grass and leaves, and falls to pieces if removed. The eggs, generally three in number, occasionally four, are identical with those laid by *S. mandelli,* and vary from a pale greenish to a pale yellowish stone-colour, spotted all over with numerous dark brownish spots, smudges and streaks; they measure about ·8 × ·6.

Actinodura egertoni ripponi. (Plate I. fig. 18.)

Actinodura ripponi O.-Grant, Ibis, 1907, p. 186; Harington, Bombay Journ. xix. 1909, p. 118.

This Bar-wing is another species which is very hard to determine. My specimens from the Bhamo Hills seem to be nearest to *A. ripponi,* which was first described from the Chin Hills, although in some cases they are near *A. khasiana,* from Assam. It is not a very common bird up at Sinlum, and I only managed to get two nests, containing two eggs each. These were placed in bamboos, and were rather deep cups, composed of moss, bamboo leaves and roots, measuring 4 × 5 outside, and 2·5 × 2·75 deep inside.

The eggs are very handsome, being, like those of *A. khasiana* from Assam, a bright blue, spotted and streaked with numerous lines of a rich reddish-brown, and measuring ·9 × ·66.

Yuhina diademata ampelina. (Plate I. fig. 14.)

Yuhina ampelina Rippon, Bull. B. O. C. xi. 1900, p. 12; Harington, Bombay Journ. xix. 1909, p. 119.

Rippon's Yuhina is very common up at Sinlum, and puzzled me a great deal when I was collecting, as it is quite unlike any other Indian bird, and it was only when I got home that I discovered to what species it belonged, and that it had been described from practically the same locality by Col. Rippon.

It is very Tit-like in its habits and notes, and continuously raises its crest and so reveals the conspicuous white patch at the back of its head. I found several nests during April; these were all placed between the upright stems of wild raspberry bushes, from three to four feet from the ground, and were very flimsy affairs, made entirely of some black roots. The eggs, the usual number of which seems to be two, are very much like small editions of *Copsychus saularis*, being of a greenish-blue ground-colour profusely spotted, more especially at the larger end, with umber-brown spots.

Average of seven eggs = ·76 × ·60.
Largest = ·80 × ·60.
Smallest = ·75 × ·58.

Staphidia striata.

Staphidia striata (Blyth); Oates, Fauna, i. 1889, p. 206; Bingham, Ibis, 1903, p. 590; Cook, Bombay Journ. xxi. 1912, p. 670.

Tickell's Staphidia is a little bird which is very rare in collections, and of which there is no good description. It was originally obtained in Tenasserim, and was procured later in Karennee; it is fairly common at Thandoung near Toungoo.

The following short description may be of use to others, as the descriptions in the 'Fauna' and the Catalogue of Birds in the British Museum are rather conflicting.

General colour above dull olive-brown; head darker with a greyish tinge, in some specimens a sooty-brown. The feathers of the head, mantle and back with white shaft-stripes. Ear-coverts dull chestnut, sides of the neck faintly tinged with the same. Wings and tail the same colour as the back but darker. The three outer tail-feathers broadly tipped with white. Underparts dull greyish white. Length about 5, wing and tail 2·37.

Its nesting was first described by Colonel Bingham, and subsequently by Mr. J. P. Cook from Thandoung, where I also procured its nest, which is always placed in a hole in a bank. The eggs are a pale bluish-white, boldly spotted with brown and purple.

Zosterops simplex.

Zosterops simplex Swinhoe; Oates, Fauna, i. 1889, p. 215.

Swinhoe's White-eye is plentiful up at Maymyo, and very partial to gardens. It builds a small cradle-like nest, similar to that of *Z. palpebrosa*, and lays the same spotless pale blue eggs.

Hypsipetes concolor.

Hypsipetes concolor Blyth; Oates, Fauna, i. 1889, p. 261.

The Burmese Black Bulbul is fairly plentiful down the eastern side of Burma, and does not ascend the hills to any great height. I found one nest at Thandoung, near Toungoo, containing two incubated eggs, on the 14th of May. This was placed near the top of a small sapling at about eight feet from the ground, and was rather a massive nest for a Bulbul. The eggs are similar to those of *H. psaroides*, from the Himalaya.

Pycnonotus xanthorrhous. (Plate I. fig. 8.)

Pycnonotus xanthorrhous Anderson; Oates, Fauna, i. 1889, p. 286 footnote; Harington, Bombay Journ. xvi. 1906, p. 741, xix. 1909, p. 122.

Anderson's Bulbul was first described from Yunnan; since then it has been found to be common along the eastern hills of Burma above 5000 feet; it prefers the open hill-sides covered with brambles, feeding on the wild raspberries which grow in such profusion. I found it particularly plentiful at Sinlum, and procured several nests. These were never more than two or three feet from the ground, and were generally placed on brambles in long grass, and I do not remember finding a single nest not placed in long grass. Three seem to be the usual number of eggs laid, occasionally only two; these have all the variations peculiar to the Bulbul family, but are all invariably very glossy.

Average of nine eggs = ·80 × ·62.
Largest = ·83 × ·63.
Smallest = ·78 × ·63.

Sitta nagaensis. (Plate I. fig. 10.)

Sitta nagaensis Godw.-Aust.; Oates, Fauna, i. 1889, p. 302; Harington, Bombay Journ. xix. 1909, p. 122.

Godwin-Austen's Nuthatch was first discovered in the Naga Hills; it is very plentiful in the hills on the eastern side of Burma, above 5000 feet, below which its place is taken by

S. neglecta. I think it must have two broods, as I had a nest containing four fresh eggs, together with the parent bird, brought me in April, and in the beginning of June saw a pair building. The nest was said to have been in a hole of a tree. The eggs are of the regular family type, white profusely spotted with red. They measure ·77 × ·58.

Urocichla reptata oatesi. (Plate I. fig. 11.)

Urocichla oatesi Rippon, Bull. B. O. C. xiv. 1904, p. 83; Venning, Bombay Journ. xxi. 1912, p. 622.

I am indebted to Capt. Venning for the eggs and parent bird of the Chin Hills Wren, and quote his description from the Bombay Journal.

"One nest was obtained on the 30th of April, on a sloping bank of dried grass beneath some trees. The bird was shot as it left the nest. The nest was a large oval-shaped domed structure, composed of an outer layer of dead leaves, canna leaves, coarse grass, etc.; inside was a layer of grass stems, fibres, and a little moss, the cup being lined up to the level of the entrance with a plaster of about one-sixteenth of an inch thick composed, as far as I could determine, of a substance which looked like chewed thistle-down or chewed grass. The bottom of the nest when first found was quite moist from contact with the damp ground. The dimensions of the whole were, exterior height six inches, diameter back to front five inches, side to side four inches. Entrance near the top about two inches across by one and a half high. Interior dimensions two inches each way, depth of cup inside from edge of entrance about one inch. Eggs three in number, measuring ·73 × ·6, ·72 × ·6, and ·69 × ·59; they were a dull white, sparingly freckled with reddish and faint purple."

Urocichla reptata sinlumensis.

Urocichla sinlumensis Harington, Ann. Mag. N. H. (8) ii. 1908, p. 246; id., Bombay Journ. xix. 1909, p. 123.

At Sinlum, on the 29th of April, 1905, a Kachin brought me in a nest containing three eggs which I could not identify, the nest being of a type entirely new to me, so I at once set out for the spot where it had been taken in the hopes of securing the birds; but, though I waited about until dark, I had no success. The nest was of such a peculiar construction that I was unable to even guess to what family it might belong. On meeting Capt. Venning a a few years later, and discussing the nesting of *U. oatesi,* I at once recognised that my nest must have belonged to Wren of the same family, as the descriptions of both were identical. When I was up at Sinlum in 1908, I procured specimens of *U sinlumensis* in the same valley in which the nest had been found, but failed to find any nest. The bird itself is a most difficult one to shoot, as it frequents the banks of streams in very dense undergrowth; and as it has a very powerful song for so small a bird, is more often heard than seen.

The nest was placed on a bank in a very damp locality, the outside consisting of a loose ball of grass and leaves, which very soon fell to pieces; inside was a remarkable little cup made of some whitish substance, which had been worked up into a sort of papier-maché; this was quite hard and evidently waterproof, a very necessary arrangement, as the bottom of the nest when brought to me was quite damp. From the peculiarity of the nest, and from its situation, I think there can be little doubt that it belongs to this species. The eggs are different from those of *U. oatesi,* two being a spotless white, the third having a faint pinkish ground-colour sparingly streaked with darker pink; in shape they are pointed ovals and measure ·75 × ·55.

Cryptolopha tephrocephala.

Cryptolopha tephrocephala (Anderson); Oates, Fauna, i. 1889, p. 423; Harington, Bombay Journ. xix. 1909, p. 124; Venning, ibid. xxi. 1912, p. 627.

Anderson's Fly-catcher Warbler is a very common little bird up at Sinlum, but I only managed to get one nest, which was brought in to me by a Kachin, together with the parent bird. The nest was a large massive globular structure of grass and roots, lined entirely with moss, and was said to have been placed in a bush about two feet from the ground. The eggs are a pure white and measure ·65 × ·48. The nest of this species has also been found by Capt. Venning at Haka, in the Chin Hills; his eggs are slightly smaller than mine and average ·59 × ·46.

Suya superciliaris. (Plate I. figs. 1, 5.)

Suya superciliaris Anderson; Oates, Fauna, i. 1889, p. 447; Harington, Bombay Journ. xviii. 1908, p. 686, xix. 1909, p. 124.

Anderson's Hill Warbler is well distributed in the hills on the eastern side of Burma. I have found it plentiful at Sinlum in the Bhamo district, and at Thandoung in the Toungoo district. It also occurs throughout the Shan States.

The usual type of nest is that of other members of the family, being a neat oval-shaped structure, made of woven grass, with a little moss in the foundation and on the top. Nests which I found at Thandoung were quite different, and were untidy balls of grass with a hole in the side, very like a miniature Munia's nest.

The eggs vary a great deal, there being half a dozen different types with intermediate forms.

(1) Pale bluish-white, spotted all over with numerous small rufous spots, which are more plentiful at the larger end.

(2) The same as the above, but the spots confined to the larger end, where they collect into a cap.

(3 & 4) The same as the above, but with a decided bluish-green ground-colour.

(5) White ground-colour, with numerous longitudinal rufous stripes.

(6) As before but on a blue ground.

(7) A pinkish ground-colour, with a decided zone of a darker shade round the larger end.

Average of fourteen eggs = ·63 × ·49.
Largest = ·70 × ·5.
Smallest = 60 × ·49.

Prinia inornata burmanica. (Plate I. figs. 2, 4.)

Prinia inornata burmanica Harington, Bull. B. O. C. xxxi. 1913, p. 111.

The Upper Burma Prinia is very common round Mandalay, and in Upper Burma in general, starting breeding operations soon after the rains have begun, and nesting from June well on into September. The usual site for a nest is in rushes and long grass growing in or near water; I have also seen them attached to weeds and plants in gardens. The nest is of the family type, being a deep purse made from woven grass, with an opening at the top; this is attached to one or more stems of grass or twigs. A few birds nested in our Mess Garden at Mandalay; these built their nests in canna leaves, which were first sewn together, forming a cone, inside which the ordinary woven nest of grass was placed.

The eggs are like those of *P. i. inornata* from India, being a beautiful pale blue, blotched and streaked with numerous curly lines of dark red. I found two nests containing abnormally coloured eggs, totally unlike the usual type, and more like those of *Franklinia*, having a blue-green ground-colour, profusely dotted with rufous spots. One nest contained four eggs of this type, and the other two, while two were almost of the normal type.

Average of nine eggs = ·62 × ·45.
Largest = ·65 × ·46.
Smallest = ·58 × ·45.

Pericrocotus fraterculus.

Pericrocotus fraterculus Swinhoe; Oates, Fauna, i. 1889, p. 481.

The Burmese Scarlet Minivet is fairly plentiful round Maymyo. I, however, only managed to find one nest; this was placed at the end of a branch of an oak tree, situated on the golf-links. It was beautifully made of moss, coated with lichen and cobwebs, and had no special inside lining.

The eggs, three in number, are greenish stone-colour, and are profusely blotched with brown and pinkish-grey, which more or less form a zone round the larger end; they measure ·78 × ·58.

Campophaga melanoptera.

Campophaga melanoptera (Rüpp.); Oates, Fauna, i. 1889, p. 492.

I believe the nesting of the Pale-grey Cuckoo-Shrike has not been recorded from Burma before, though it has lately been described from China by Lieut. Vaughan, R.N., in 'The Ibis' of April, 1913.

I found this species very plentiful at Maymyo, but had very bad luck with its nests, of which I found three altogether. These were all shallow cups placed either in forks or on a branch, and were only noticeable after they had been given away by the birds. One contained two young birds and one egg. Another I watched building; the bird eventually started incubating one egg, which I took; a third, also building, was inaccessible. This bird has a monotonous call, very like the hen of the Rufous-bellied Cuckoo, *Cacomantis merulinus*, and is also very like the Drongo Cuckoo in appearance, and from a casual glance may often be mistaken for a Grey Drongo, and for these reasons be overlooked. My one egg is similar to those described by Lieut. Vaughan.

Oriolus tenuirostris.

Oriolus tenuirostris Blyth; Oates, Fauna, i. 1889, p. 503; S. Baker, Bombay Journ. ix. 1894, p. 118; Harington, ibid. xx. 1911, p. 1007, xxi. 1912, p. 587.

The Burmese Oriole is extremely plentiful at Maymyo, where we found several nests. These were suspended in the usual Oriole fashion, and were very substantially built of yellow grass and leaves, measuring outside about 6 × 4 × 3 deep and inside 4 × 3 × 2·5 deep. Nests are not easy to find, as they are remarkably well concealed, although one may be sure of their presence from the behaviour of the birds. Many were nesting near houses in the station of Maymyo, and the extraordinary thing was that all the nests were built in close proximity to those of a Drongo: in fact, if there happened to be a "King Crow's" nest in the compound, and if any Orioles were heard, it was almost a certainty that their nest would be placed near that of the Drongo. I also found the Little Red Dove, *Œ. tranquebarica*, taking the same advantage and nesting under the protection of "King Crows." *O. tenuirostris* also breeds in the Fort at Mandalay, where I found one nest in my compound.

The eggs, which are usually three in number, are of the regular family type, a dull white, sparingly dotted with dark red and black spots.

Average of six eggs = 1·15 × ·86.
Largest = 1·2 × ·88.
Smallest = 1·12 × ·86.

Æthiopsar albicinctus. (Plate I. fig. 20.)

Æthiopsar albicinctus (Godw.-Aust. and Wald.); Oates, Fauna, i. p. 541; S. Baker, Ibis, 1906, p. 269.

The nesting and eggs of the Collared Myna are now well known, and I have nothing to add to Mr. Stuart Baker's notes except the finding of a spotted egg, in a clutch of four, taken from a nest in a hole in the Fort Ditch at Bhamo, on the 15th of May, 1905. This egg is of the usual blue colour, but has numerous rusty red spots, and is now figured.

Oreicola ferrea haringtoni.

Oreicola ferrea haringtoni Hartert, Vög. pal. Fauna, i. 1910, p. 711.

Oreicola ferrea (Hodgs.); Oates, Fauna, ii. 1890, p. 66 [part]; Harington, Bombay Journ. xiv. 1902, p. 598, xviii. 1908, p. 686, xix. 1909, p. 299.

Hartert's Bush-Chat is a common breeding species in the hills of Burma above 5000 feet. When I first took its nest I was greatly struck with the colour of the eggs, which are quite different from the descriptions given of those of *O. ferrea* from India. In the 'Catalogue of Eggs in the British Museum,' Mr. Oates draws attention to this difference between the eggs of *O. ferrea* from India and China, the latter agreeing with eggs from Burma.

All the nests I have found were in holes in banks, a favourite breeding place being on the side of the road-cuttings. The nests are made almost entirely of grass. The eggs are a pale hedge-sparrow blue, generally spotless, like those of *O. jerdoni*, a few having faint indications of minute red specks.

Passer flaveolus.

Passer flaveolus Blyth; Oates, Fauna, ii. 1890, p. 242.

The Pegu or Phongyi Sparrow, as it is often called from its yellow breast, has its stronghold in the dry zone of Upper Burma and the southern Shan States, and is sparingly found down as far as Rangoon; I did not meet with it in the Upper Chindwin or Bhamo districts. It is chiefly a jungle sparrow, a few pairs being found round houses. It starts building operations early in March, taking advantage of any convenient hole in trees or buildings. I have taken their eggs from the inside of old nests of Munias (*Uroloncha punctulata*). The nest, when self-built, is of the ordinary sparrow type, and three is the usual number of eggs laid, though I once took a nest containing five. These are very like those of a Tree-Sparrow but are smaller and a good deal paler in colour.

Cypselus pacificus cooki.

Cypselus pacificus cooki Harington, Bull. B. O. C. xxxi. 1913, p. 57.

The only place where I have met with this Swift, is in the Goteik Gorge, on the Maymyo-Lashio railway-line, in the northern Shan States*. It is probably resident, as I have seen it there both in March and June, and during the latter month it was nesting in the caves, which form a natural bridge under which the river flows, and over which the railway-bridge is constructed. I have been informed that it also breeds in the tunnels on the Lashio side of the railway.

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* In a letter received from Mr. J. P. Cook he states that he has recently discovered some new caves about 30 miles north of Goteik where these Swifts are to be met with in thousands.

I visited these caves on the 2nd of June, and saw hundreds of birds flying in and out, and noticed numbers of nests which were quite inaccessible (it would be possible to reach a few with the aid of ladders). The caves are also infested with innumerable bats, which are very noticeable from the stench and the noise they make. These bats must take a heavy toll of the Swifts, as I picked up quite a number of eggs which had clearly been sucked; a few, which had fallen into pools of water, made quite presentable specimens. The Swifts themselves are difficult to procure, for if shot in or near the caves they fall into the river. Outside the gorge is very steep, and covered with dense jungle, so the only possible way to obtain specimens was to shoot them from the railway-bridge, which is some hundreds of feet high, and to have someone below to retrieve the birds. I picked up a fully fledged young bird in the caves, as well as a nest; this was saucer-shaped and composed of grass, leaves and feathers, cemented together with saliva. Two eggs picked up in the caves are a glossless white, and in shape elongated ovals, measuring 1·0 × ·67.

Baza lophotes.

Baza lophotes (Temm.); Blanford, Fauna, iii. 1895, p. 409; Harington, Bombay Journ. xxi. 1911, p. 587.

The nest and eggs of the Black-crested Baza have been taken and described before, but as it is such a rare bird, it may be of interest to record the finding of it again.

I have seen this species on three or four occasions near Maymyo. In March last year, when returning from manœuvres, I saw over a dozen birds. These were evidently migrating, as they were all in one party *. On the

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* *Note by* Mr. E. C. Stuart Baker.—I doubt if they were migrating. *Baza lophotes* is much given to collecting in flocks at all times except during the breeding season.

29th of April, 1911, while out birds'-nesting at Wetwun, near Maymyo, I heard a pair of birds calling, and evidently very excited. On going in the direction we spotted a pair of Hawks flying round a clump of tall trees, on the bank of the river, below which were a troop of monkeys, who seemed to be the cause of all the trouble, as they made off on our approach ; the birds then quieted down, one flying into the trees and settling on a nest. This was quite a small affair, placed at the end of a long branch, about a hundred feet up. I sent my Burmans to climb the tree and investigate ; they were unable to reach the nest on account of the slenderness of the branch, but managed to get above and reported two eggs.

The only plan seemed to be to build up a ladder from below. We accordingly returned to the village to make arrangements, and soon after the men came back bringing a thin bamboo about 12 feet in length and a piece of black sticky beeswax ; they then proceeded to demonstrate their plan, which was to extract the eggs with the aid of the wax at the end of the bamboo. They practised several times on a hen's egg, which they managed to pick up every time, and as this seemed to work all right, and was the easiest way of getting the eggs, we decided to adopt it. We then made a sort of landing net out of a cap fixed at the end of another bamboo, the idea being to hold the cap at the edge of the nest, and then to pick up the eggs with the aid of the wax at the end of another bamboo, and so place them in the cap. After a good deal of practice on the hen's egg the men started up the tree, two getting out as far as they could along the branch, one holding the cap in position at the edge of the nest, while the other extracted the eggs one at a time and placed them in it. They were completely successful in bringing down both eggs safely.

The nest seemed very small from below, and according to the men was composed entirely of twigs, lined with green leaves

The eggs, which were incubated, are a dull spotless chalky white, and measure :—1·5 × 1·3 and 1·48 × 1·25.

Amaurornis bicolor.

Amaurornis bicolor (Walden); Blanford, Fauna, iv. 1898, p. 171; Harington, Bombay Journ. xx. 1910, p. 378.

Major Tancock, R.A., obtained the first record of the occurrence of Elwes' Crake in Burma, procuring a nest and six eggs, together with the parent bird, at Sinlum on the 9th of May, 1909.

When up at Sinlum on the 29th of May, 1905, whilst out birds'-nesting, my spaniel put up a Bamboo Partridge, *Bambusicola fytchii*, out of a small swamp. As the bird was extremely noisy, both before and after it got up, I felt certain that there must be a nest, so marking the spot, which was within a few feet of me, I told a Kachin, who was out with me, to look carefully—sure enough he found a nest, and brought out four unmistakable rail's eggs, which were quite warm. Together with the dog, we carefully hunted that swamp, which was only a few feet in diameter, without putting up another bird. Whether the Partridge only happened to be near the nest, or had usurped it, I cannot say, but the fact remains that the bird got up at the exact spot where the nest was found. These eggs puzzled me for a long time; they are, however, exactly similar to Major Tancock's, and others I have received from Assam, where, I believe, *A. bicolor* nests freely in the Khasia Hills. At Christmas-time, 1909, I procured other specimens of *A. bicolor* at Sinlum, so it is evidently a resident and non-migratory species, inhabiting the small bogs and swamps in the Kachin Hills.

Arboricola brunneipectus.

Arboricola brunneipectus Tickell; Blanford, Fauna, iv. 1898, p. 128.

My Burman collector found a nest containing four eggs of the Brown-breasted Hill Partridge at Toukchan, near Rangoon, on the 5th of June, 1907, procuring a bird near the same spot, so that I think there is little doubt that the eggs belong to this species, the only Hill Partridge occurring near Rangoon. These are a clear white with very little gloss, and are almost identical in size and shape with those of *A. atrigularis* from Assam; they measure 1·49×1·1.

EXPLANATION OF PLATE I.

Eggs of Indian Birds.

1. Suya superciliaris.
2. Prinia inornata burmanica.
3. Suthora brunnea.
4. Prinia inornata burmanica.
5. Suya superciliaris.
6. Schœniparus dubius intermedius.
7. Drymocataphus ignotus cinnamomeus.
8. Pycnonotus xanthorrhous.
9. Schœniparus dubius intermedius.
10. Sitta nagaensis.
11. Urocichla reptata oatesi.
12. Ægithaliscus erythrocephalus talifuensis.
13. Stachyrhidopsis ruficeps bhamoensis.
14. Yuhina diademata ampelina.
15. Trochalopterum phœniceum ripponi.
16. Trochalopterum milnei sharpei.
17. Trochalopterum milnei sharpei.
18. Actinodura egertoni ripponi.
19. Garrulus leucotis.
20. Æthiopsar albicinctus.
21. Garrulus leucotis.

II.—*Notes on Birds observed in Katanga, Belgian Congo.*

By L. Beresford Mouritz, M.B.O.U.

In 1911 I spent the last months of the year in the Katanga District of the Belgian Congo. The nature of the work in hand—a prospecting expedition under Anglo-Belgian auspices—unfortunately made it impossible to devote any time to the study of the local ornithology, and the following notes are simply the result of occasional observations made whilst out hunting, on the march, etc. It is perhaps hardly necessary to add that the few birds noticed do not in the least represent the great wealth of species which undoubtedly could be obtained by systematic collecting.

I arrived in Elisabethville about the middle of August, and after a short delay set out for the veld; but before leaving I was rather surprised to see a Black Helmet-Shrike (probably *Sigmodus tricolor*) in some tall trees in the Avenue du Moero.

From the capital we went to Tshinshenda and spent some time up and down the railway-line, especially in the neighbourhood of Moushosi. At Tshinshenda there were a few Wheatears (*Saxicola pileata livingstonii*) on the open ground close to the station; but I think that they must be only dry-season migrants, as when we revisited this locality in December they had apparently left. Yellow-billed Kites (*Milvus ægyptius*) were plentiful and, I understood, resident. These Kites, which the natives call "vimbwi," were occasionally seen solitary, but more frequently in parties; they were constantly round our camp in the bush, and displayed great audacity in the way in which they would swoop down to within a few feet of a "boy" and snatch up some morsel of meat. Peters' Glossy Starling (*Lamprocolius sycobius*) was very numerous, and I found it throughout the trip.

Finishing our immediate work along the railway, we travelled down to Sakania, and from here set out in earnest for Kalonga, *viâ* Kavalo and Mandoko. We stopped at Muelwa's kraal on the Muniengashi River for a few days on account of inclement weather, and here enjoyed some good hunting. I found the Saddle-bill Stork (*Ephippiorhynchus senegalensis*), native name "sepi," in a bit of a swamp in the hills at the headwaters of the Muniengashi, and there were several large nests—without eggs—built up above the low vegetation of the marsh, which probably belonged to these birds. Several Crowned Cranes (*Balearica regulorum*) were seen in pairs on the swampy vleis along the Muniengashi, but this was the only time I met with these handsome birds. Plum-coloured Starlings, which I ascertained were referable to *Cinnyricinclus leucogaster verreauxi* were plentiful. I also shot a Thrush (*Turdus libonyanus tropicalis*), which was inquisitively investigating the tents from a tree close by. On the break of the weather we pushed on towards the North-Western Rhodesia border, passing through country, evidently from the old spoor, frequented by elephant and numbers of buffalo in the wet season. Here I met with the fine Lourie (*Musophaga rossæ*), but found it always very wary and difficult of approach.

The beautiful Livingstone's Lourie (*Turacus livingstonii*) is, however, much commoner, but prefers the more sequestered haunts to be found amid the trees and semitropical vegetation growing in ravines and along the water-courses, to the ordinary timbered bush. An ignorant native was at great pains in the endeavour to persuade me that *Turacus* was merely the female of the larger species !

On the march one day we passed a lot of deep holes dug in the light soil, and our "boys" explained that these had been made by the local natives in the pursuit of "pendwa" (ant-bears). In one of these holes, in which there were stakes driven in from side to side in the semblance of a ladder, I found a species of bush Kingfisher breeding in a tunnel close to the surface. This bird had a red bill, and seemed to have the whole of the upper side a bright cobalt-blue. On the Moushosi Escarpment, later, I found a Kingfisher, apparently quite similar to the above, nesting in a hole of a tree about 10 feet from the ground—nest contained young. Honey-Guides (*Indicator indicator* and *I. major*) were very plentiful, and the line of porters became so scattered and impossible to handle, on account of their putting down their loads to look for honey, that we had to prohibit them breaking ranks for this purpose. The natives call the Honey-Guide "inguyi," and they seem so passionately fond of honey that it was impossible to stop them from following the "friend of bush-people," as, directly our backs were turned, they would sneak off in twos and threes every time they heard the harsh grating "churr . . . churr" of an "inguyi." Some of the loads after a long journey would be so smeared and sticky with honey that we came to curse these birds. At different times I noticed a number of Kestrels, especially over the natives' lands and in the more hilly regions, and I think they were identical with the South African species (*Cerchneis rupicola*). The Bateleur Eagle (*Helotarsus ecaudatus*) is perhaps the commonest of the larger Birds of Prey, and is known to the natives as "chikori."

Arriving at Mandoko, we stayed some time in the vicinity, but, although elephants were reported from the upper reaches of the Niamandi River, we failed to come up with them. Close to Mandoko I noticed a species of Rock-Martin (probably *Ptyonoprogne anderssoni*) in small numbers, and suspect that they breed in the quartzite hills here. The Kites, which frequented our encampment regularly, were often accompanied by White-necked Ravens (*Corvultur albicollis*), and occasionally a Pied Crow (*Corvus scapulatus*) would be venturesome enough to make a quick dash and quicker exit. The Ravens — "chikwangala," — strangely enough, seemed most plentiful in the bush districts away from the hills. I noticed several species of Sun-birds, but they were all new to me with the exception of Kirk's (*Chalcomitra kirki*), and I think a red-breasted species seen here and there was probably referable to the Northern Double-collared Sun-bird (*Cinnyris ludovicensis*), whilst another was evidently referable to the genus *Anthothreptes*. A common bird found nearly everywhere was the Bulbul (presumably *Pycnonotus barbatus tricolor*). The Standard-wing Nightjar (*Macrodipteryx vexillarius*) was the commonest species noted, and was found practically throughout. The natives call the male "lubafa" and the female "kumbaza"; but I think the latter name is frequently applied to other species as well. On October 6th I found two clutches of two and one single egg of the Mozambique Nightjar (*Caprimulgus fossii*) on the foot-hills of the Irume Mountains. During a heavy rainstorm I have seen this Nightjar leave the ground and seek shelter on the bough of a tree, where it remained until the rain ceased. On the same date I also saw a number of Willow-Wrens (*Phylloscopus trochilus*), and heard them singing feebly; they appeared to have only just arrived.

After following the Loömbwa River some distance, we ran into the broadest tsetse-fly ("kasembi") belt encountered during the journey; and here one morning, returning with "boys" to cut up a large buffalo which I had shot, I saw several White-headed Vultures (*Lophogyps occipitalis*) which had congregated in the anticipation of a good feast.

On several occasions I have noticed "fly" settle on birds which I have bagged (guinea-fowl, etc.), and I therefore think it most probable that the tsetse not infrequently bites living birds as well as animals.

Leaving the river we passed through the country to the east of Mts. Moposhi, Miuta, and Kampondo, and this was the driest portion of our trip. We were, however, lucky enough to find stagnant water (which gave the tea quite an unique taste!) in deep-dug holes, but all the kraals were deserted. In spite of the waterless state of the country there were large numbers of sable, roan, eland, and haartebeeste, and we enjoyed excellent shooting. Two Hawk-Eagles (*Hieraëtus spilogaster* and *Spizaëtus bellicosus*) were noted here, but the former only came under my notice subsequently—when I saw a pair on the Moushosi Escarpment. Whilst out hunting one day I shot two sables, and the first (the herd bull) galloped off into the bush before falling. When I arrived, after despatching the other one, a Red-billed Oxpecker (*Buphaga erythrorhyncha*) was perched on the animal's back. On our approaching nearer, however, the bird called several times and flew to a tree close by, whilst the fine old bull turned its head, and, upon seeing us, struggled into a standing position and charged my gun-bearer before I stopped it with a second bullet from my D.B. 303. There it stood, shot through the neck, with its front legs spread a bit, swaying in its death-agony, only to fall stone dead. The vernacular name for the Oxpecker is "sompa"; and although it is locally distributed in the Katanga, there are a good many in the rhinoceros-veld between the Luembe East River and the Luapula. In the neighbourhood of Mt. Moposhi I found the Larger Stripe-breasted Swallow (*Hirundo cucullata*) in pairs.

Arriving at Inkosakapenda's on the Loömbwa, I saw Marabou Storks (*Leptoptilus crumeniferus*) associated with puku ("sebula"), whilst at other times they were to be seen solitary in the uppermost branches of a flat-crowned acacia, where they would stay stolidly, perched on one leg, for hours. On a mere, close to our encampment, there were a lot of Dabchicks (*Podiceps capensis*) breeding, and I also saw a single Great Crested Grebe (*P. cristatus*), while there were also a good many Ducks (*Anas undulata*). The Large Wattled Plover (*Lobivanellus lateralis*), the Three-banded Plover (*Ægialitis tricollaris*), and two species of Sandpiper were other birds noted in this locality. On the Loömbwa itself, also on the Luapula later, I saw several Sea-Eagles (*Haliaëtus vocifer*), and their piercing screams became quite familiar. The native name for these fine birds is "kwazi." A big flock of Eastern Red-legged Kestrels (*Cerchneis amurensis*) put in an appearance one day and roosted in a large bare tree close to the river. White-bellied Storks (*Abdimia abdimi*) also were in evidence, but I did not see the White Stork. On the flats by the river I noticed the Yellow-throated Longclaw (*Macronyx croceus*), and often saw them running about amid the herds of puku antelope. A common bird in the bush was Smith's Helmet-Shrike (*Prionops talacoma*) and I found it throughout. Everywhere the Fork-tailed Drongo (*Dicrurus afer*) was especially numerous, and, as is its wont, always in evidence at grass-fires, where, however, its daring is quite outclassed by the graceful and leisured, yet methodical, ways of the Kite. The natives know the Drongo as "matengu." I observed several Grey Cuckoo-Shrikes (*Coracina pectoralis*), but it was an uncommon and local species. Other birds which I found somewhat locally distributed were the African Hoopoe (*Upupa africana*)—native name "bubuti"—and the Wood-Hoopoe (*Irrisor erythrorhynchus*). A large Nightjar, which I found on a stony rise close to Inkosakapenda's, appeared to be the Freckled Nightjar (*Caprimulgus trimaculatus*). The Pied Kingfisher (*Ceryle rudis*)—native name "mlondwi"—and the Giant Kingfisher (*C. maxima*)—"matambo"—both occur here and there along the running streams, but appeared to become more numerous after the rainy season had set in.

Leaving this locality we pushed on through Pola and struck the Luapula River. This fine waterway runs south and westwards out of Lake Bangweolo (approx. alt. 1200 metres), and turning north eventually flows into Lake Moero (alt. 972 metres). Hammerheads (*Scopus umbretta*)—"masalutaka"—became more plentiful; but it is a widely distributed species, and I found it in most localities suited to its habits. As is the case south of the Zambesi, the natives regard this bird with superstition, as well as the larger Striges. Returning from hunting one evening I saw a pair of Fishing Owls (*Scotopelia peli*) flying along the river-bank at sunset, but did not meet with the species later. The Green Ibis (*Theristicus hagedash*) was found, but only in twos and threes. Guineafowl (*Numida* sp. incog.) were numerous here as elsewhere, but were extremely wary—this being probably due to the approach of the breeding-season. The native name is "kanga." These birds seemed to closely resemble *N. mitrata,* agreeing in the shape of the helmet, but I found the soft parts to be: irides deep brown; helmet deep orange-yellow; naked skin on the face and neck blue; wattles blue with scarlet tips; bill brownish-horn; legs and feet varying from dark greyish-brown to blackish. Common Sandpipers (*Tringoides hypoleucus*) occurred in several places, but I did not notice them after the rains had set in properly. A few red-legged Plovers (*Stephanibyx coronatus*) were observed, but I found them very local. The White-rumped Swift (*Apus caffer*) occurred on our approach to Kalonga, but was not seen anywhere else; whilst the Black-collared Barbet (*Lybius torquatus*) was seen here and there, but was not a plentiful species. On the ant-hill studded flats along the Luapula, which carry numbers of puku and reed-buck, I noticed several different kinds of Larks and Pipits, but could not be sure of identification. One species, however, I think was referable to the Grey-backed Lark (*Pyrrhulauda verticalis*). Entering timbered country again, the Black-headed Oriole (*Oriolus larvatus*) became quite common, and I also came across one or two Andersson's Orioles (*O. notatus*). Along the streams Weaver-birds were nesting in November and December. I found eggs of the Black-headed Weaver (*Ploceus nigriceps*), but the commoner Smith's Weaver (*Sitagra ocularia*), although present in larger numbers, did not seem to have commenced laying. Late in October I found a Woodpecker's nest (apparently *Campothera bennetti*) containing two nestlings. The nest was situated in the hole of a tree only five feet from the ground. The native name for this bird is "swiswi."

We stayed at Kalonga for over a fortnight, and were gladdened by the sight of a white man—a Belgian Official being stationed here on the Sleeping Sickness Cordon (Kalonga being the southernmost post on the Congo side). All canoe-navigation, with the exception of the ferry, on the river below this point was stopped, and the whole place, like other Belgian Official Posts, seemed a pretty dead-and-alive sort of hole. Early in November here I noticed the House-Martin (*Delichon urbica*), together with the little Pearl-breasted Swallow (*Hirundo dimidiata*) and numbers of the Smaller Stripe-breasted Swallow (*H. puella*) ; a few days later, there was a perceptible wave of Common Swallows (*H. rustica*), amid which I am almost sure a good many White-throated ones (*H. albigularis*) were intermingled. The native name for a Swallow is "tumimiïa." Towards the middle of November great numbers of Black Swifts (*Apus apus*) appeared, but I do not think they stay very long in the district. A small Woodpecker (probably *Dendropicus zanzibari*) was not infrequently noticed within the precincts of the Post. The "Go-away Bird" (*Chizaerhis concolor*), so familiar south of the Zambesi, was found to be very local in the Katanga and by far the rarest of the family. On a sand-spit at the head of an island a short distance below Kalonga I identified, with the aid of glasses, the African Spoonbill (*Platalea alba*); and a flock of Geese (*Plectropterus gambensis*)—"karangu,"—flying in their customary V-shaped formation, was also noted here. Before our departure the European Roller (*Coracias garrulus*) appeared, and was subsequently found throughout the trip; but its relative, the noisy Cinnamon-backed species (*Eurystomus afer*), is equally numerous and, moreover, resident. The Little Bee-eater (*Melittophagus meridionalis*) was rather plentiful, but appeared to frequent the rivers to a great extent. There was a pair of Black-and-White Wagtails (possibly referable to *Motacilla vidua*) always about the Belgian Official's house; and I also met with this bird at nearly every large kraal we passed through; it is known to the natives as "kaliïlia."

Upon leaving Kalonga we travelled through timbered country with the usual vleis; and at Sikobwa's kraal, where there were a lot of buffalo on the Chalinagoma River, we halted for a few days. Here I noticed the Little Egret (*Herodias brachyrhyncha*) again, but not in the numbers which were to be seen along the Luapula in places. The native name is "kunkolikoli." Verreaux's Glossy Starlings (*Cinnyricinclus leucogaster verreauxi*) were also very plentiful. The beautiful male was in evidence throughout the low-lying wooded country, whilst the dull-coloured female was also common, but I did not find it associating with the opposite sex to any extent. This Starling was not found in the hills, nor was it often seen along the larger rivers. Two or three Bush-Shrikes were also noted, amongst which I recognised the Black-headed (*Pomatorhynchus senegalus*) and also, I think, the Eastern Three-streaked species (*P. minor*). Hartlaub's Shrike (*Laniarius major*) was also not uncommon. Contrary to my expectations, I did not see the European Red-backed Shrike (*Lanius collurio*), which is such a common summer visitor south of the Zambesi. A plentiful species throughout was Arnot's Black Chat (*Myrmecocichla nigra*).

Arriving at Sakania once more we obtained a fresh supply of stores and set out, parallel with the railway, towards the Mokambo Hills; and here I noticed a Tree-Creeper (*Salpornis salvadorii*) on November 25th. European Bee-eaters (*Merops apiaster*) now appeared in considerable numbers, whilst the rarer Blue-cheeked species (*M. persicus*) and, I think, Boehm's (*M. boehmi*) also occurred less plentifully. The natives call a Bee-eater "imbangalima." Whilst camped here I shot a Tawny Eagle (*Aquila rapax*), but this was the only one seen. Fruit-Pigeons, which appeared identical with Schalow's (*Vinago schalowi*), were not uncommon in places, but inclined to be local. Native name "polobi." I found the Red-eyed Dove (*Turtur semitorquatus*) especially abundant in the neighbourhood of natives' lands and kraals, and they are known as "kiwa" or "kufia." The smaller Laughing Dove (*T. senegalensis*)—"kumperi"—was also plentiful and more widely distributed than the last named.

Striking out across country we eventually arrived at the Moushosi Escarpment, and here remained for a considerable time. The Ground-Hornbill (*Bucorax cafer*), the "menornba" of the natives, was very common, and not a day passed but we heard the peculiar booming note of this bird. The call is particularly noticeable early in the morning, often starting before sunrise, and consists of two notes (answered by the female with a similar call, but in another key). As the sun ascends, the call often consists of four or five notes, and so on, until about 9 or 10 o'clock, when they become silent to a great degree. Other species of Hornbills noticed were the Zambesi Trumpeter (*Bycanistes cristatus*), the Crowned Hornbill (*Lophoceros melanoleucus*), and, I think, the South-African Grey species (*L. epirhinus*). The natives call the larger species "malongwe" and the smaller "vunvunganana." When we were at Sikobwa's kraal the "boys" brought into camp two fledgeling "malongwe" (*Bycanistes*) which they had taken from a hole in a tree, after the female had been released by her mate. Again, about a week later, the cook captured a female Crowned Hornbill which was imprisoned, but which was nearly through with her moult. This bird was very fat and in extremely good fettle, and was considered a great delicacy. Parrots (*Pœocephalus meyeri*) were common here, and I believe I also saw a larger species, with red in the wing, on one or two occasions. When returning from shooting one morning, I had left my "boy" to bring in a fine big bushbuck, when I saw a duck in a small stream flowing out of one of the many ravines here. This little duck proved to be a Cape Widgeon (*Nettion capense*). On seeing me it dived, or rather submerged itself almost completely, and I blew the back of its head off with a ·375 Express bullet! The native name is "chosu," but this is applied to other species as well. I found the little Emerald-spotted Dove (*Chalcopelia afer*) rather numerous, especially on the Escarpment, and the natives know it as "katutwa." The Coqui Francolin (*Francolinus coqui*) was found to be widely distributed, but somewhat more plentiful on the higher ground. Natives call it "chesumisondi" or "chintalatala." There were also "partridges" (*Francolinus* sp. incog.)—"kapezi"—and "pheasants" (*Pternistes* sp. incog.)—"insokozi," but the latter are the more numerous. The upper plumage of the "pheasant" somewhat resembles that of *P. swainsoni*, but below the feathers are speckled with dark greyish-brown and white, and with broad rufous edges extending from the throat to the under tail-coverts—the rufous edging, however, being more pronounced on the lower breast and abdomen than elsewhere. Bare skin round the eyes, on throat, beak, and legs red. Close to the headquarters of the Moushosi River I noticed a species of Rail (apparently *Rallus cærulescens*), whilst on the same river I saw Peters' Fin-foot (*Podica petersi*). On a tributary I met with a species of Ibis, but was unable to procure a specimen. There were only two of them, and they appeared to be slaty-grey both above and below. It was, however, well known to the natives, as they called it "umnganga" and told me that it was an extremely shy bird. This I found to be true. They would not permit me to approach within gunshot, but kept on flying off, with shrill cries, to the nearest outstanding tall tree. On the Moushosi River I noticed a good many Black-thighed Bishop-birds (*Euplectes xanthomelas*), and I first saw males in breeding plumage on the 13th of December, when I also noted a single Red-collared Widow-bird (*Coliuspasser ardens*), a male and in summer plumage. Once I saw some White-eyes (*Zosterops* sp. incog.). The Black Titmouse (*Parus niger*) was common, and there was also a rarer grey species in evidence at times. On November 30th I shot a species of *Psalidoprocne* on the Tshinshenda River. Upon dissection it proved to be a male. Description (this specimen was sent to the Pretoria Museum for identification, but was unfortunately lost in the post):—Above and below sooty black, glossed with steel-green—most pronounced on the head, neck, breast, and upper tail-coverts. Wings (especially the secondaries) and rectrices browner, but also glossed; first primary serrated; primary-quills white at bases, but quickly merging into brown; under wing-coverts and axillaries greyish, the former merging into pale brownish. Irides black, bill black, and feet brownish-black. Length 133, wing 101, tail 71, tarsus 10, and culmen 5 mm. I also noticed this Swallow (*a*) between Katala's kraal and Sakania, where it was flying in company with the European (*Hirundo rustica*), the Wire-tailed (*H. smithi*), and the little Pearl-breasted Swallows (*H. dimidiata*); (*b*) near Mokambo Hills; (*c*) Moushosi Escarpment; (*d*) Moushosi River. In the last instance they were flying in company with the Larger Stripe-breasted Swallow (*H. cucullata*), the European Sand-Martin (*Cotile riparia*), and the Banded Sand-Martin (*C. cincta*). On the 11th of December I shot a Harrier-Hawk (*Polyboroides typicus*) and also a Hooded Vulture (*Necrosyrtes pileatus*). The Vulture, one of two which came and perched in some trees overlooking our tents, was very tame (probably very hungry), and evidently could not resist the sight of so much meat—we had been rather successful in our hunting, and the "boys" were engaged cutting up and drying their portions and spreading the strips of meat on the usual rude framework of sticks over a fire. The native name for these birds is "duni," sometimes "morni" or "makubi." The Lead-headed Flycatcher (*Tchitrea plumbeiceps*) was not uncommon; but, as a rule, was only to be found in the dense growth which occurs along the majority of streams and in some of the ravines. I noticed one or two Purple Rollers, but did not ascertain whether they were referable to *Coracias mosambicus* or *C. nævius*. Two bush-loving Kingfishers (*Halcyon swainson* and *H. albiventris orientalis*) occur, but neither is at all numerous. On the 15th of December I met with a solitary Wryneck (*Iynx ruficollis*) on the Moushosi River, but I did not see this rare bird elsewhere. Later a single Coucal, presumably the Senegal Coucal (*Centropus senegalensis*), came under my notice.

Leaving this locality—our last real camp—we made for Tshinshenda, and on the way saw two or three Pearl-spotted Owlets (*Glaucidium perlatum*), which I had not previously noted, and also a larger species which was probably referable to *Bubo maculosus*—"magungwi." When we were at Kalonga one of our "boys" brought me a fledgeling Spotted Eagle-Owl.

Arriving back at Elisabethville before Christmas, I saw a Pin-tailed Widow-bird (*Vidua serena*) in town and also a blue Kingfisher, apparently similar to the birds met with near Mandoko and on the Escarpment, but with a black bill, and thus agreeing altogether with others which I came across on the Moushosi River.

III.—*An Ornithological Expedition to the Eastern Canary Islands.* By David A. Bannerman, B.A., M.B.O.U., F.R.G.S.—Part I.

(Plates II.–VI.*)

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(Part II. will contain an annotated list of the birds obtained, with systematic notes on each species.)

[The Expedition undertaken by Mr. D. A. Bannerman to the eastern Canary Islands in the months of May and June last has considerably increased our knowledge of the avifauna,

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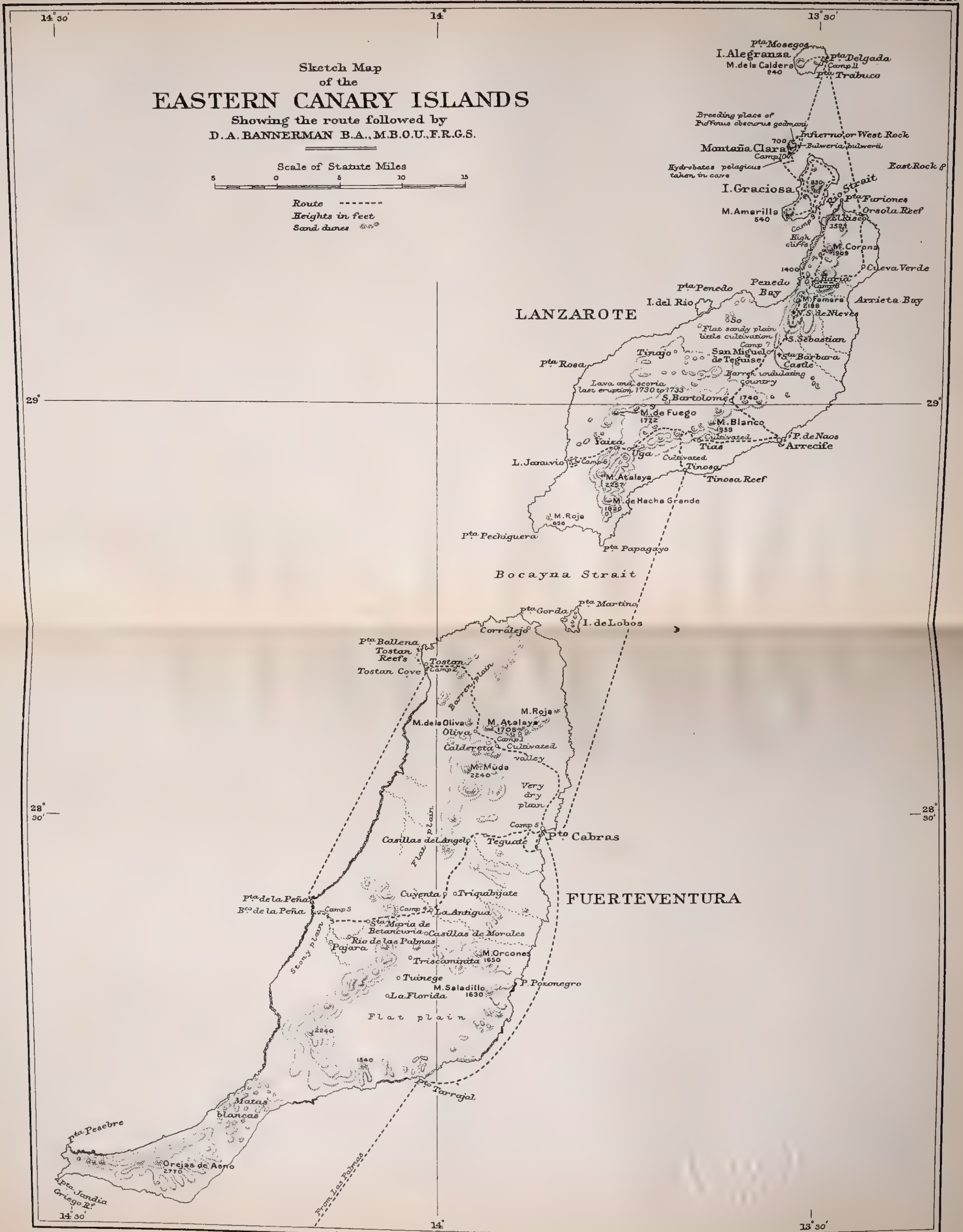
* For explanation of the Plates see p. 90.



Sketch Map
of the
EASTERN CANARY ISLANDS
Showing the route followed by
D. A. BANNERMAN B.A., M.B.O.U., F.R.G.S.

Scale of Statute Miles

Route ------
Heights in feet
Sand dunes

14° 30'
14°
13° 30'
29°
28° 30'
5
0
5
10
15
Pta Mosegos
I. Alegranza
M. de la Caldera
240
Pta Delgada
Camp 11
Pta Trabuco
Breeding place of Puffinus obscurus godmani
Infierno or West Rock
700
Montaña Clara
Bulweria bulwerii
Camp 10
Hydrobates pelagicus taken in cave
East Rock
I. Graciosa
830
Rio Strait
Pta Fariones
Orsola Reef
M. Amarilla
540
Camp 9
El Risco
1523
High cliffs
M. Corona
1909
1400
Cueva Verde
Haria
Camp 8
Penedo Bay
Pta Penedo
I. del Rio
M. Famara
2188
Arrieta Bay
N. S. de Nieves
LANZAROTE
So
Flat sandy plain little cultivation
S. Sebastian
Camp 7
Tinajo
San Miguel de Teguise
Sta Barbara Castle
Pta Rosa
Barren undulating country
Lava and scoria last eruption 1730 to 1733
S. Bartolome
1740
M. de Fuego
1722
M. Blanco
1959
Cultivated
P. de Naos
Arrecife
Yaiza
Tias
Uga
L. Janubio
Camp 6
Cultivated
Tinosa
Tinosa Reef
M. Atalaya
2257
M. de Hacha Grande
1820
M. Roja
656
Pta Pechiguera
Pta Papagayo
Bocayna Strait
Pta Martino
Pta Gorda
I. de Lobos
Corralejo
Pta Ballena
Tostan Reefs
Tostan
Camp 2
Tostan Cove
Barren plain
M. Roja
M. de la Oliva
M. Atalaya
1706
Oliva
Camp 1
Caldereta
Cultivated valley
M. Muda
2240
Very dry plain
Camp 5
Pto Cabras
Casillas del Angel
Teguate
Flat plain
Cuyenta
Triquabijate
FUERTEVENTURA
Pta de la Peña
Bco de la Peña
Camp 3
Camp 4
La Antigua
Sta Maria de Betancuria
Casillas de Morales
Rio de las Palmas
Pajara
Stony plain
M. Orcones
1650
Triscaminita
Tuinege
M. Saladillo
1630
P. Pozonegro
La Florida
Flat plain
2240
1540
Pto Tarrajal
Matas blancas
Pta Pesebre
Orejas de Asno
2770
Pta Jandia
Griego Rf
From Las Palmas

and has added to the National Collection a valuable series of birds in their breeding-plumage together with examples of their young and eggs. The birds in this group of islands are now strictly protected during the nesting-season, but, thanks to the intervention of Sir Edward Grey, the difficulties of obtaining a permit to collect were eventually overcome. The specimens thus obtained are therefore of very special value.

The Natural History Museum now possesses a very complete collection of birds from the Canary Islands, thanks to the work done by Mr. Bannerman and the generosity of Mr. E. G. B. Meade-Waldo. About twenty years ago the latter visited nearly all the islands in the group, making extensive collections, and the results of this work were published in 'The Ibis' between the years 1889 and 1893. He was the fortunate discoverer of several interesting new species, more especially two Blue Titmice, *Parus ombriosus* from Hierro and *P. palmensis* from Palma, likewise a very remarkable new Chat, *Saxicola dacotiæ,* from Fuerteventura; while his companion, the late Canon Tristram, described a fine new Chaffinch, *Fringilla palmæ,* from Palma. To Mr. Bannerman's credit lies the discovery on Allegranza and Montaña Clara of a second form of Chat which, though closely allied to the species from Fuerteventura, seems to be a well-characterized and quite distinct form.

During his expedition Mr. Bannerman was ably seconded by A. H. Bishop, who had been deputed by the Natural History Museum to accompany him.—W. R. O.-G.]

INTRODUCTION.

MR. E. G. B. MEADE-WALDO, writing in 'The Ibis' in 1890, concludes his excellent series of papers on the "Birds of the Canary Islands" with the following sentence:—"I am afraid that, with the exception of the Petrels, nothing much remains to be done; but to observe these satisfactorily, it would be necessary to visit and carefully work the outer islands and rocks during the months of June and July."

Since this was written, a great deal has been added to our knowledge of the avifauna of this group, but apparently no one has ever systematically worked the outlying islands.

With the intention, therefore, of thoroughly exploring these little-known islets and at the same time working through the large islands of Fuerteventura and Lanzarote, I left England on the 16th of April, 1913, for Gran Canaria. The expedition was undertaken officially on behalf of the British Museum, to the officers of which institution I am indebted for permitting me to make use of the services of A. H. Bishop as taxidermist.

The Hon. Walter Rothschild kindly contributed to the expedition on the understanding that part of the collections made should go to the Tring Museum.

The principal papers in the past, dealing with the eastern Canary Islands, have been contributed by Mr. Meade-Waldo, Herr Polatzek, and Herr von Thanner *.

On our arrival in Gran Canaria considerable and unforeseen difficulties arose. The Spanish Government, which had been approached by the Foreign Office on the subject, refused to allow me to proceed, but owing to the efforts of H.M.'s Consuls at Tenerife and Gran Canaria (Mr. Croker and Major Swanston) these difficulties were eventually overcome, and we left Las Palmas as originally arranged on the night of May the 4th.

I should like here to express my deep gratitude to His Majesty's Consuls, Mr. Croker and Major Swanston, for the innumerable services which they rendered to the Expedition ; had it not been for their timely intervention we should most certainly have been forced to abandon our project altogether. Although, as far as our own plans were concerned, the attitude of the Spanish Government proved

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* Meade-Waldo, Ibis, 1889, pp. 1–13, 503–520 ; 1890, pp. 429–438 ; 1893, pp. 185–207. Polatzek, Orn. Jahrb. 1908, pp. 81–119, 161–197 ; 1909, pp. 1–24, 117–134, 202–210. Von Thanner, Nov. Zool. 1904, pp. 230–234 ; Orn. Jahrb. 1903, pp. 211–217 ; 1905, pp. 50–66, 211–214 ; 1908, pp. 198–215 ; 1909, pp. 148–150 ; 1910, pp. 81–101, 226–229 ; 1912, pp. 221–228.

somewhat embarrassing, yet it is distinctly good news that the Spanish authorities have at last realised that birds need protection during the breeding-season, especially on islands such as the Canary group. If the Guardia Civiles, who are charged with the enforcement of the Act, would only carry their vigilance beyond the radius of the chief towns, they would be carrying out a more useful work than is at present the case.

I wish to render my best thanks to Mr. W. R. Ogilvie-Grant and Mr. C. E. Fagan, I.S.O., of the British Museum (Natural History), for the aid which they have given me in organising the Expedition. To Mr. E. G. B. Meade-Waldo I am deeply indebted for much useful advice, which proved invaluable throughout the trip. I was lucky in possessing a copy of his original private diary ; I was thus enabled to compare, in the larger islands at any rate, the conditions of bird-life to-day with those existing twenty years ago when he himself did so much work in this group.

Lastly, I wish to say a word in praise of my taxidermist, A. H. Bishop, who carried out his work well and conscientiously and placed a most creditable number of skins to his account.

It must be understood that this paper merely deals with my own personal observations in the eastern Canary Islands. I have not, as in my previous paper ('Ibis,' 1912, p. 557), embodied the results arrived at by other ornithologists working on this group.

I landed at Las Palmas (Gran Canaria) on April the 22nd, and between that date and May the 4th a number of birds and eggs were collected in the neighbourhood of Las Palmas and in the small mountain village of Firgas. On our return from the eastern group, another week (June 18 to 23) was spent in Gran Canaria while waiting for a boat to take us to England. My notes on the birds of this island I have not included in the general account of the Expedition. They refer chiefly to the nidification of certain species, and will be included in the work on the birds of the entire group upon which I am at present engaged.

The following itinerary will serve as a guide to the route taken in the Islands and indicates clearly the base-camps from which collections were made.

Itinerary of the Expedition.

	Left	Las Palmas, Gran Canaria	May 4th.
	Arrived	Puerto Cabras, Fuerteventura	May 5th.
	Camp 1.	Caldereta, Fuerteventura	May 5th to 6th.
	„ 2.	Toston, „	May 6th to 10th.
	„ 3.	La Peña, „	May 10th to 14th.
	„ 4.	Antigua, „	May 14th to 16th.
	„ 5.	Puerto Cabras, „	May 16th to 18th.
	Arrived	Tiñosa, Lanzarote	May 19th.
	Camp 6.	Playa Januvio, Lanzarote	May 19th to 22nd.
	„ 7.	San Miguel de Teguise, „	May 22nd to 23rd.
	„ 8.	Haria, Lanzarote	May 23rd to 27th.
	„ 9.	Isla Graciosa	May 27th to June 7th.
Visited concurrently.	„ 10.	Isla Montaña Clara	June 7th to 14th.
		(From which Camp the Roque del Oueste was visited on June 11th.)	
	„ 11.	Isla Allegranza	June 9th to 14th.
	„ 12.	Haria, Lanzarote	June 14th to 15th.
	„ 13.	Arrecife, „	June 15th to 16th.
	Arrived	Puerto Cabras, Fuerteventura	June 17th.
	„	Gran Tarajal, „	June 17th.
	„	Las Palmas, Gran Canaria	June 18th.

FUERTEVENTURA.

Early in the morning of May the 5th, the little steamer in which we had made the voyage from Las Palmas dropped anchor off Puerto Cabras, the principal town of Fuerteventura. She had previously touched at the small port of Gran Tarajal, some twenty miles further south, where we landed on our return journey *. Puerto Cabras is not by any means a beautiful village, but in the early morning light it possessed a certain picturesqueness with its square white houses built on the slope of a hill.

Camels are the beasts of burden in the eastern Canary Islands; indeed it is almost impossible to hire a mule for

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* See p. 88.

1. A typical Tamarisk Valley in Fuerteventura.

2. North-West Cliffs of Montana Clara.

riding purposes, and, in consequence, progress when on the march is deplorably slow. Forced as we were to carry all food with us for such a long period, with tents, collecting-boxes, and personal baggage, our little cavalcade of seven camels created quite a stir as we streamed out of Puerto Cabras, taking the road to Oliva. For the first few miles the track lay parallel with the sea-shore—a low coast-line with stony beach upon which were seen Kentish Plovers and Turnstones. From the coast a flat barren plain stretches to a range of low hills running north and south, but with some quite high peaks amongst them. Indeed, I was surprised to find how mountainous the country appeared to be. Birds were remarkably scarce, short-toed Larks and a very few Pipits, a single pair of Kestrels and two Sand-grouse (the latter flying very high and at a great speed) were the only species noted. We soon left the coast behind, and as we turned inland began gradually to ascend.

A single flock of Coursers and a Shrike were seen. Just before reaching Caldereta we met with Meade-Waldo's Chat (*Saxicola d. dacotiæ*) for the first time. We camped for the night at Caldereta (350 ft.), a small collection of farm buildings about an hour and a half's ride from Oliva. I found birds much more plentiful here — Hoopoes in numbers flying about the buildings and cactus plantations. Trumpeter Bullfinches came to the well of dirty water to drink, clinging on to the rough perpendicular walls with remarkable cleverness while they quenched their thirst. All were in very fine breeding-plumage. Young birds of the year in sandy-brown plumage were not uncommonly seen, while some old birds were still sitting on eggs. Short-toed Larks were very numerous, and the palm trees all appeared to be full of the nests of *Passer h. hispaniolensis*. In one case a pair of Kestrels were feeding young in the same palm where several Sparrows were nesting—a somewhat remarkable occurrence; but as the Kestrels in these islands seem to exist almost entirely on beetles and lizards, the fact is not so surprising as would appear. Two clutches of

Quails' eggs were brought in—one of nine, the other of five eggs.

In a pomegranate tree behind the camp I found the nest of *Lanius excubitor kœnigi* (from which the young had flown), composed of thickish sticks and bits of the prickly shrub *Launæa spinosa* and lined with rags, cotton, and camel's hair, a very untidy structure. An Egyptian Vulture, actually the first we had noted, came round the camp in the evening, after the birds' bodies which we threw away. On a plain covered with loose stones a pair of Thick-knees were evidently breeding. The female was remarkably tame and allowed us to approach quite close before flying a short distance away, where it stood and gazed at us.

We left Caldereta the following afternoon, intending if possible to reach Toston on the north-west coast before dark. The way led along the side of a range of hills with a wide deep valley on our right in which a fair crop of wheat had been cultivated. Before reaching Oliva we again met with *Saxicola d. dacotiæ*, all young birds of the year. Short-toed Larks were here extremely plentiful, but Berthelot's Pipits on the other hand were quite scarce. Passing over some sandy ground two small flocks of Coursers were seen, birds which I did not find by any means common along the route I followed until we reached the big plains in the centre of the island. We rode into Oliva very soon afterwards—a large village built on an utterly bare plain surrounded by hills, also entirely barren except where the ground had been terraced to enable the earth to be cultivated. To the north of the village a good deal of cactus has been planted, amongst which Hoopoes, Shrikes, and Linnets were noted. My attention was drawn to one Linnet having a brilliantly crimson breast, the others all being much paler than those subsequently met with in Lanzarote. The ride from Oliva to the coast was not particularly interesting, everywhere terribly barren but more hilly than I had expected to find it. Mile after mile the country was very much the same, and apart from Short-toed Larks and Hoopoes, birds were conspicuous by their absence.

As we neared the coast the ground became more sandy, and a few Coursers were seen. We crossed several dry water-courses which appeared like wide cracks in the earth, zigzagging to the sea, and then over rising ground between hills, from the summit of which we looked down upon a large, absolutely flat plain stretching to the sea. Toston, a tiny village noted for its lime-quarries, is perched on the top of the cliffs, and to the north could be made out the fine lava reefs on which we hoped to find the rare Black Oystercatcher (*Hæmatopus niger meadewaldoi*). The camels soon crossed the intervening plain, where more Coursers were seen, and I selected our camping ground some way from the village under the shelter of an old Spanish tower and within a stone's throw of the edge of the cliff.

Four days were spent in this camp (May 6–10) and a very thorough survey made of the district, especially the coast-line and reefs, of which a short description may be of interest before proceeding to the birds found thereon.

The main reefs stretch from Toston village to beyond the lighthouse—a distance of some two miles, and are well exposed at low tide, running out horizontally to the coast. They are composed almost entirely of black basaltic lava much worn by the action of the waves. The foreshore is also made up of huge lumps of this lava, often a good stride between each block. Beyond the lava a stretch of hard sand merges into the sand-dunes, with are covered sparingly, but more or less universally, with the same four plants which we met with everywhere.

In these sandhills many Kentish Plovers were breeding, but I did not discover any Terns here, although it would be hard to imagine a more suitable spot. Larks and Pipits as usual were found in small numbers. The belt of sandhills is succeeded by a wide plain which stretches to a low range of hills, absolutely barren in their entire extent and all curiously rounded and undulating. Few birds were seen on this plain, which was covered with small loose stones and an occasional desert plant, among which *Ononis ramosissima* Desf. and *Euphorbia paralias* L. were recognised.

Coursers, already mentioned, many Hoopoes, which seem to be absolutely at home in these barren wastes, Short-toed Larks and Berthelot's Pipits in small numbers, a Shrike or two, and an occasional flock of Rock Doves, feeding on the miserable patches of corn, completed the list.

The reefs proved more interesting, and considerable numbers of Waders were observed. The Oystercatcher, however, was not to be found, and I learnt from the lighthouse keeper, who knew the bird well by sight, that he had never seen it on this part of the coast. Kentish Plovers were literally in hundreds and breeding in the sandhills; Turnstones were in flocks, many in beautiful full breeding-plumage, although with the testes quite undeveloped; a pair of Grey Plover also in full breeding-plumage, a few Common Sandpipers and Dunlins, together with Redshanks, Ringed Plovers, and a single Heron, were noted. Whimbrels were numerous, and I distinctly heard a Curlew.

This list comprises the Waders usually met with in the eastern Canary Islands at this season. Many others doubtless touch here on migration, but with the exception of Sanderlings, which sometimes are quite common, they are mostly stragglers to this group.

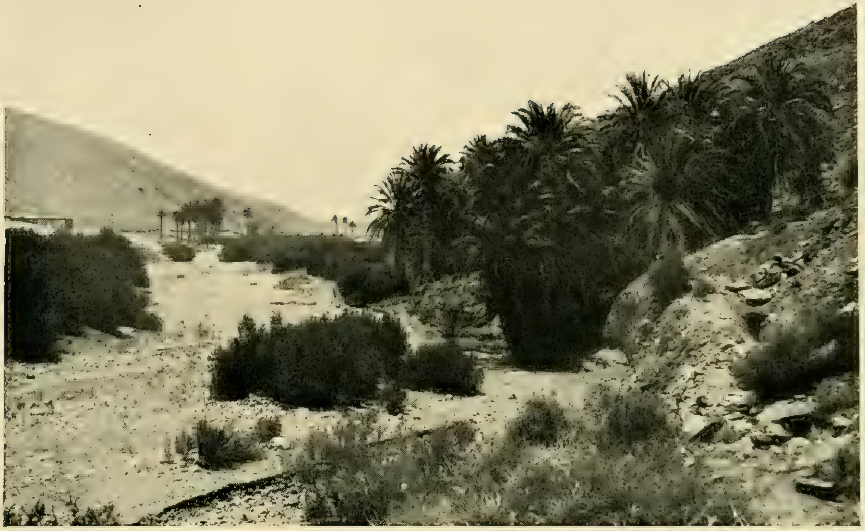
We struck camp early in the morning of the 10th as we intended, if all went well, to sail from Toston to La Peña, 21½ statute miles down the coast, where we were assured that a landing could be effected. A sail of 4½ hours brought us to Punta de la Peña, where we ourselves landed with great difficulty by jumping on to the side of the cliff. A stiff climb brought us to the summit, while our two boats rounded the headland in order to land our baggage in the sandy cove. A huge swell was breaking here and one of the boats capsized, throwing everything into the water; the other was with difficulty run ashore, and the work of transporting our various semi-soaked belongings up the Tamarisk valley begun. Our camp was pitched about a mile from the sea under some magnificent date-palms on the estate of Don Pedro Menrique. Fresh water was here in abundance, and as a result a splendid crop of wheat and maize had been cultivated. The Barranco de la Peña (Plate III. fig. 1) is closely overgrown with Tamarisk scrub, and in the distance the clump of palms can be seen under which our camp was pitched. I had intended only to remain for one night, but I soon found that birds of all descriptions were so plentiful in this valley that four days would be well spent here. It was in this barranco that we first met with the Fuerteventuran Blue Titmouse (*Parus c. degener*), which we found to be quite plentiful, frequenting especially the fig trees and tamarisks.

According to Polatzek, nesting commences at the end of February, and we saw a number of birds of the year in company with the old ones. Von Thanner has also seen adults feeding young on the 3rd of March.

The distribution of this Blue Tit is peculiar. One may travel for many miles without meeting with any at all, when on entering a certain district they will suddenly become quite plentiful. After leaving La Peña I never saw them again in Fuerteventura: they have, however, been recorded from several other parts of the island by other naturalists, and of course there are many places which I did not have time to visit. Another species here met with for the first time was the Sardinian Warbler (*Sylvia melanocephala leucogastra*). These birds were most plentiful amongst the tamarisk bushes, in which they were extraordinarily difficult to locate. Their note always betrayed them, however, and if you sat still in the middle of the scrub several would soon show themselves. I noticed that the hens seemed to be much more in evidence than the cocks; they had apparently only just finished nesting, as I found several recently vacated nests. These were usually placed in the fork of a tamarisk about four feet from the ground, and a variety of materials was used in their construction: thin sticks, dried grass, camel's hair, and bloom of the tamarisk, with often a lining of goat's hair.

One of the most plentiful species in this valley was Meade-Waldo's Chat (*Saxicola d. dacotiæ*). These birds frequented the tamarisks which lined the dry bed of the barranco, especially just above our camp. A photograph is given of this barranco showing the type of country they seemed to prefer (Plate IV. fig. 1). Water, though rather salt, was abundant, and according to Herr von Thanner is essential to their place of abode. Polatzek, on the other hand, found them sometimes in waterless tracts of country. I seldom saw them on the ground for long, but they would sit on a bough of tamarisk, much as our Flycatcher sits at home, and only occasionally dart out to catch some insect or else fly on to a stone in the middle of the barranco, where they would sit jerking their tails up and down after the manner of a Redstart. They had all long since finished breeding, and in consequence young birds in the speckled plumage were more in evidence than the adults. They lay their eggs, according to Messrs. Polatzek and von Thanner, very early in the year—a bird having been taken on January the 15th in which was found an egg ready for extrusion. The principal breeding-time, however, appears to be March and April. Such a complete account of the nesting of this species is given by the above authorities in their papers, published in the 'Ornithologische Jahrbuch,' that anyone desiring more information on this point cannot do better than consult their works. I have placed my notes on the present distribution of this Chat under the separate heading *Saxicola d. dacotiæ* in the list given in Part ii. of this paper to appear in the April number of 'The Ibis.'

Many other birds inhabited this fertile barranco. Goldfinches were met with for the first time and were common. Brown Linnets, the males with *crimson* breasts, were also plentiful and seemed to have a particular liking for the prickly pear. They were breeding at the time of our visit and several nests were found; one, containing four eggs, was composed of dry grass, corn-stalks, a plant something like raw cotton, a few feathers, and lined thickly with a species of silky thistle. Turtle-Doves cooed on every side, and were just then nesting in the palms and tamarisk scrub; I found a nest in one of the latter bushes containing two eggs which had only just been laid. A pair of Shrikes



1. The Home of *Saxicola dacotiæ dacotiæ*. A Barranco on the West Coast of Fuerteventura.

2. Montana Clara, Roque de l'Oueste, and Allegranza, showing Graciosa in foreground.

(*Lanius l. kœnigi*) was often seen in the dry bed of the barranco, and both Berthelot's Pipits and Short-toed Larks were found sparingly. Hoopoes were very numerous and the noisy Spanish Sparrows simply swarmed, and were again found nesting in the same palm as a pair of fine Kestrels, belonging to a new subspecies recently named by Dr. Ernst Hartert.

In another barranco not far from this camp, I was shown the nest of a Kestrel built in a hole on the steep face of the cliff. By carefully climbing along a ledge, about 40 feet from the top, I was enabled to reach this nest, from which a single young bird had been taken and brought in to me by a small Spanish boy earlier in the day. This young Kestrel, which was still in down, contained one whole lizard and half a lizard, one mouse (entire), and a quantity of beetles. The nest smelt very strong and many remains lay about in all directions. Further along the cliff a huge nest had been built under an overhanging ledge of rock in a sheltered position, in which a pair of Ravens had recently reared their young. This nest was built of large dried sticks and lined with smaller ones, amongst which pieces of rag and what appeared to be lumps of clotted camel's hair had been woven.

Between this barranco and the valley in which our camp was situated lay an extensive stone plateau, on which Sand-Grouse (*Pterocles arenarius*) were said to be often found.

In the evenings, Swifts (*Micropus m. brehmorum*) and an occasional Swallow used to hawk over the corn and maize, screaming loudly in concert as they darted amongst the trunks of the trees which bordered the field. Another Swift (*Micropus u. unicolor*) was sometimes seen nearer the coast, but always flying very high out of gunshot. I have seldom seen these two species in company.

While staying at this camp several Bats were shot which proved to be all of one species, *Pipistrellus kuhlii*. They only came out just before darkness fell and were thus very hard to obtain. Bats are distinctly rare in the eastern Canary Islands. Curiously enough the same species was obtained on the high ground of Gran Canaria, while *P. savii* was found in the neighbourhood of Las Palmas on the coast.

We left this delightful spot on May the 14th to cross the range of mountains to Antigua, which is situated on the huge plain in the centre of the island.

The path led over the spur and for some distance ran along a dried-up water-course between undulating barren hills which rose from three to four hundred feet on either side. As we advanced, the bed of the water-course rose steadily and the sides of the barranco became steeper and more rocky. Many roosting-places of Vultures were to be seen here, and I noticed a Buzzard hovering above our heads, almost the only one I saw while in Fuerteventura. The camels plodded on bravely, making very good progress until we had ascended 900 feet, when the country became much greener and the hillsides were covered with plants and grasses. A Shrike was seen here and several flocks of Trumpeter Bullfinches, but these were practically the only species met with. At 1350 feet we passed over a plateau sown with wheat, where Short-toed Larks became abundant. Wherever corn is cultivated *on high ground*, these little Larks are to be found. Having crossed this plateau we began quickly to descend to Santa Maria de Betancuria—a tiny old-world Spanish village hidden away in the mountains, a place of great historical interest, the original capital of the island in the 12th century and celebrated for its ancient monastery. Hoopoes, Sparrows, and Kestrels were noticed here.

After resting our camels for half an hour we left the village for the last part of the journey, climbing steadily upwards until we reached the summit of the range separating the eastern from the western side of the island. We passed over this ridge at 1900 feet, and from here obtained the most extensive views in every direction. The sea was visible to the east and west, and far down below was spread an immense plain bounded by hills on all sides.

In this expanse the villages of Casillas de Morales, Antigua, Triquibijate, and Casillas del Angel, with their scattered white houses, were plainly visible. On the southern side a low range of hills separates this country from an even larger plain, where the villages of Triscaminita, Tuineje, and La Florida are situated, which district Mr. Meade-Waldo made his centre of activity.

The town of Puerto Cabras, where we had landed, lay behind a range of hills fringing the coast, and away to the north another huge plain was visible, for the most part very barren save in the immediate neighbourhood of a few straggling villages and farms, where palms and fig-trees stood out above the grain-fields. From the summit of the pass where we had halted to rest the camels, the path wound over the bare mountain-side and over a part of the plain to Antigua. We passed through the village and pitched our camp on the further side. Hoopoes seemed more plentiful than ever and Pale Swifts were hawking over the fields in numbers. In the evening Coursers were seen close to the camp, and we obtained several in the spotted plumage of the immature birds; Sand-Grouse were also heard. The following morning, May the 15th, we were awakened by the musical call of the Hoopoes, "Ta-bo-bo-bo, Ta-bo-bo-bo," on all sides. On account of this cry they have received the local name of "Tabobo."

I had planned to spend the days on the plains and hoped to meet with Coursers, Sand-Grouse, and especially the Bustard (*Chlamydotis undulata fuerteventuræ*), which I had not yet come across. For this purpose, therefore, I hired a donkey and set out in the direction of Casillas de Morales, for it is almost impossible to approach the Bustard on foot. We had gone a long way before one was sprung, and although I knew the bird well in the skin, I was greatly surprised at its large expanse of wing. It only flew about a hundred yards and then alighted, watching to see if it was being followed. The donkey scrambled over the stony plain as fast as possible, but when within fifty yards the bird began to run and kept this distance between us until it finally took to flight again. The prickly "*Ahulaga*" bush, spoken of by Mr. Meade-Waldo, was here very plentiful and was covered with many snails, upon which the Bustard feeds. From accounts which I received in this district it appears that this fine bird is not nearly so common as in former years, although it may be still fairly plentiful on the plains round Tuineje. After leaving the Bustard we went to look at a spot where a pair of Sand-Grouse (*Pterocles arenarius*) had had their nest. The eggs had already been brought in to my camp. They had been laid within the shelter of a ring of stones, where the earth appeared to have been slightly hollowed and a few pieces of dried grass scratched together. The birds were still close to the spot, and rose as we approached. Curiously enough I did not see any Coursers on this part of the plain. They seem to keep to circumscribed areas where the stones are smaller and the soil more sandy, often close to where corn has been sown. I found the neat cup-shaped nest of a Trumpeter Bullfinch built under a large stone; it contained four fresh eggs. Short-toed Larks swarmed, and with Hoopoes seemed to be the only other inhabitants of the plain. Round the camp at Antigua, Berthelot's Pipits were very common, and Desert Bullfinches, Short-toed Larks, Hoopoes, and Pale Swifts could be seen and heard in every direction. I also watched for some time a pair of Shrikes and a young *Saxicola d. dacotiæ*, the latter had evidently been reared in the neighbourhood and was ridiculously tame.

While we were in this camp numbers of eggs, and young birds all in more or less interesting stages of plumage, were brought in; the eggs chiefly belonged to such species as *Erythrospiza g. amantum*, *Anthus b. bertheloti*, *Calandrella m. polatzeki*, *Acanthis c. harterti*, *Pterocles arenarius*, and *Cursorius g. gallicus*. The young of all the above species were obtained here, with the exception of the Sand-Grouse, added to which several young Hoopoes in varying stages of plumage were collected. Those from the same nest differed greatly in size.

We left Antigua on May the 16th, travelling by the only road in Fuerteventura, on the last stage of our journey in this island. We passed through Cuyenta and Casillas del Angel over two large plains separated by undulating burnt-up country, with hardly a sign of bird-life save the ever present Short-toed Larks, Hoopoes, and a few Shrikes. I had not seen very many Shrikes so far, and none in the sandy plumage which Mr. Meade-Waldo mentions, although several which I shot appeared to be moulting out of rather sandy-coloured feathers into the grey of the adult freshly-moulted bird. At midday we arrived on the plateau immediately above Puerto Cabras, and pitched our camp on some private ground close to a farm. Here we repacked our Fuerteventuran collection for my wife to take back to Las Palmas the following day, while we waited for the little interinsular boat to take us to Lanzarote. The collection from Fuerteventura numbered 123 birds, 93 eggs, 4 bats, 2 hedgehogs, and a rabbit, besides a fair series of botanical and entomological specimens. As we had twenty-four hours to spend before our boat came in, we employed the time in collecting in the neighbourhood. Swifts are very common here, and a number were obtained both of *Micropus murinus brehmorum* and *M. u. unicolor*. The former now had all very white throats. I was anxious to see if they were breeding in the same place along the coast as Mr. Meade-Waldo had found them on April the 1st, 1888, so, with this object in view, I followed the coast-line for some distance south of Puerto Cabras. Waders were very scarce, only Kentish Plovers and Turnstones being seen—many of the latter in full breeding-plumage. *Larus cachinnans* was common, but I did not see a single example of *Larus fuscus affinis*.

I found the cliffs which Mr. Meade-Waldo spoke of in his paper, just as he described them. They appeared to be formed of a kind of hard sandstone and were full of holes which looked as if they had been made by the action of water, so even were they. Certainly they are not now used as nesting-places by the Pale Swift. Only one hole appeared to be occupied, and this was considerably larger than the majority and was, I think, inhabited by a Kestrel. The coast to the south of Puerto Cabras is very rocky. Immediately beyond the cliffs mentioned above lies a sandy cove bordered by sand-dunes which are closely overgrown with a curious Euphorbia-like plant.

Pipits were common here, and as we turned inland and passed over the plain, Trumpeter Bullfinches and Short-toed Larks became extraordinarily abundant. Coursers were very scarce, but Sand-Grouse, on the contrary, were plentiful. Parts of the plain appeared like a sheet of purple caused by the *Suæda fruticosa* Forsk. being in full bloom, and with the dark undulating hills in the distance a fine scenic effect was produced. The only other species met with were Hoopoes, Shrikes, and Spanish Sparrows, which latter rose in clouds from a field of grain.

The following morning I went out very early to try to shoot some Sand-Grouse—an old farmer showed me the best place to lie up for them—and built a circular butt of big stones round me, leaving three loop-holes through which the muzzle of the gun could be pushed. This butt was placed close to where the birds were wont to drink at a running açequia. Two and a half hours were spent in this butt with a certain amount of success. The "gangas," as the natives call them, are very shy birds through being continually shot at, and notice the slightest movement, hence it is necessary to keep perfectly motionless in the butt. They begin flying at about 7 A.M., but most of them are late drinkers, and I found they came chiefly between 9 and 9.30, although many were as late as 9.45 A.M. The Black-breasted Sand-Grouse come flying very fast, uttering their pretty liquid call which sounds like bubbling water—they circle round once or twice and then settle about forty yards from the açequia, looking round carefully to see if they are observed. When satisfied that no danger threatens them they approach the water's edge in a series of short runs, the head close to the ground and ever on the look-out. When the water is reached they drink greedily, and it is now that the native sportsman chooses to fire, when three or four are often bagged at a single shot. Sometimes as many as eight or ten together in a flock will arrive, but often a pair only would come to drink.

The remainder of the day (May the 18th) was spent in completing my map and diary and in preparing for the journey to Lanzarote. The last tent was taken down after dinner by the light of the moon, and at 9 o'clock we boarded the little steamer and said goodbye to Fuerteventura. It was a calm and beautiful night, the sea like glass, and a full moon overhead made even Puerto Cabras look distinctly attractive as viewed from our moorings in the harbour.

Lanzarote.

At 5 A.M. on the morning of May the 19th we dropped anchor off the tiny port of Tiñosa, situated on the south-east coast of Lanzarote. Here we were delayed for a very considerable time haggling over the price of camels, but at last our difficulties were overcome and we left the coast at 11 A.M. While waiting in Tiñosa, which is noted for the quantities of onions which are exported from there, I had plenty of time to note all the birds in the neighbourhood. Several Yellow-legged Herring-Gulls were basking on the rocks and were very tame. Swifts (*Micropus m. brehmorum*) were plentiful, and I noticed two House-Martins amongst them. A fine pair of Kestrels was hovering over the hill-side but I failed to obtain them; the male was a particularly old bird. My intention was, if possible, to cross Lanzarote and camp close to the only lake found in the islands, which lies on the south-west coast, and is salt. The first part of the journey led up a steep incline from Tiñosa on to a terribly dry plateau. The cultivated soil seemed to consist entirely of powdered lava, the boundary walls being built of huge lumps of the same material. In these "fields" stunted maize and cactus struggled for existence, and in every other available patch wheat had been planted. Brown Linnets, Pipits, and Kestrels were the commonest birds seen here; and a fine dark Falcon, which I imagine to have been *Falco eleonoræ,* dashed past, almost black in colour and with narrow pointed wings. Having crossed this plateau we ascended by a bad path to the Carreterra, which we found to be a really good road evidently rarely used by wheeled vehicles. To the north, towards Arrecife, the land slopes gradually from the central range of mountains to the sea, and seems to be thickly populated and to have every inch under cultivation. The mountains, which we were approaching, appeared as a large chain of craters running N.E. and S.W., falling at their western extremity due south and culminating in the conspicuous Montaña de la Hacha Grande, which rises to 1860 feet.

We passed through a depression in this range, leaving a huge moon-shaped crater on our left, and then entered the most fertile country I had yet seen in either of the large eastern islands. The road wound through vineyards and fields of maize and wheat which were planted everywhere with fig-trees and palms. Although the earth seemed still to consist of cinders, the crops on all sides looked highly prosperous. Birds at once became more numerous, Spanish Sparrows, Linnets, Trumpeter Bullfinches, Pipits, Short-toed Larks, Pale Swifts, Kestrels, and Egyptian Vultures being seen. Another Falcon was noticed just before passing through the mountains. We soon neared the village of Uga, behind which lies a group of huge craters, including the famous Montaña del Fuego. From these volcanoes an enormous lava-flow several miles in breadth stretches to the sea. Huge blocks of lava are thrown and heaped one upon another without a vestige of green to vary the monotony. This lava was as sharp as a knife and boots were simply ripped off our feet. The character of the country from Uga to Yaiza, where we changed camels, is much the same, but from the latter village to the coast a great difference is noticeable. Fertile fields and vineyards give way to the most utterly barren waste of country it has ever been my lot to cross. On our right was the huge lava-stream of almost coal-black lava with the bare craters rising behind. On our left dried-up, undulating ground, sown with an occasional patch of very thin grain. The only birds which seemed to be at all plentiful were Kestrels, which with Pipits and Trumpeter Bullfinches appeared to have the entire waste to themselves. I noticed that Short-toed Larks were entirely absent. At length the path, which had been running between high walls of lava, led out on to a flat tableland, where a flock of Coursers and some Hoopoes were seen. After speedily crossing this we found ourselves looking down some 50 feet on to the Lago Januvio—a small expanse of water having a shore-line two miles in length, which is separated from the sea by a strip of beach composed of lava, ground almost to dust by the continued pounding of the surf. Our tents were pitched in this natural basin within fifty yards of the lake, after a very long and fatiguing day.

The following morning was spent in exploring the lake and neighbourhood: my fears of the previous night were only too well founded. Ornithologically the locality proved most disappointing. Kentish Plovers, as usual, were breeding close to the lake, and round the water's edge Dunlins and a huge flock of Turnstones were feeding. We walked right round the lake without seeing anything of further interest. On the lava-flow, which continues into the sea, a yellow Finch was seen—a straggler, doubtless, from the African mainland; brown Linnets were also quite common, and several Kestrels were noticed. As the "Lago" did not yield anything of interest we ascended to the plateau above, where Coursers, Shrikes, Hoopoes, and Pipits were procured; many of the Coursers were birds of the year. Bishop woke me next morning to say that there was a flock of Grebes on the lake: a close inspection through glasses pointed to their being the Black-necked Grebe (*Podiceps n. nigricollis*), but we were unable to shoot a specimen before they flew over the dividing bank out to sea. The weather was boisterous, and they had evidently come in to shelter on the calm water. A plentiful species in North Africa, these Grebes are very rare stragglers to the Canary Islands. They have been recorded on one occasion at any rate from the Azores.

Rare and peculiar birds are evidently occasionally seen on Lago Januvio by the fishermen, who remembered and described to me a bird which could only have been a Flamingo. The occurrence of this species on the lake has, I believe, been recorded before, but I cannot find the reference.

The afternoon of May the 21st was spent in collecting in the neighbourhood of Yaiza and Uga, and besides the species already mentioned from these localities, Ravens and Vultures were noted, and on the ride to the villages a pair of Thick-knees was flushed. Butterflies were abundant in the fields of tomatoes; Painted Ladies, Bath Whites, Red Admirals, Clouded Yellows, and Little Blues being the commonest kinds met with. I determined to leave our present camp early on the following morning, as it would have been only a waste of precious time to remain here a day longer. Accordingly on May the 22nd we started, on what proved to be our longest march, from the Lago Januvio to San Miguel de Teguise, via Arrecife, 23 miles as the crow flies. The first part of the route was over the same ground as we had traversed on the outward journey, as far as the bridle path leading from Tiñosa. Thence we rode over miles of uninteresting plain, the ground gradually ascending to 700 feet, when we arrived at the village of Tias. Short-toed Larks again became plentiful; they seem to stick to the cornfields, as none were noticed between Yaiza and Playa Januvio. From Tias the first view of Arrecife is gained—over an immense wind-swept plain without a tree or blade of grass; the only birds of interest observed on this plain were two Collared Pratincoles (*Glareola p. pratincola*). These are very rare visitors to the islands; both were obtained, and proved to be a male and female with testes and ovary small. Finding that we could not stay in Arrecife, we pushed on to Teguise, 900 feet above the sea, the road rising all the way over extremely barren country. As we did not reach our destination until darkness had fallen, we were obliged to put up our tents in the middle of the town itself, much to the astonishment of the inhabitants on the following morning. It was from Teguise that I afterwards procured a fine example of *Falco peregrinus pelegrinoides* * from a Spanish ornithologist, who assured me that it had been shot while chasing the tame pigeons in the town. A night was spent here, and early on the 23rd of May we left for Haria, a ride full of interest from start to finish. Leaving the old castle of Santa Barbara on our right, we ascended quickly through land which was all carefully cultivated. Hoopoes, Brown Linnets (the males with very crimson breasts), Short-toed Larks, Sparrows, and Pipits were all numerous, especially in the neighbourhood of San Sebastian, which lies at 1000 feet. Figs and palms were now left behind, and at 1900 feet a plateau was reached which was shrouded in thick driving mist. Wheat and beans were growing here, and to my surprise the note of the Corn-Bunting was heard and the bird eventually procured. This is a migratory species to the eastern Canary Islands but is resident on the western Islands. Polatzek says that it returns to Fuerteventura and Lanzarote in the spring, and he has taken the eggs in the former island in March and April. I myself received a clutch from Tuineje in Fuerteventura on my return to Gran Canaria. Curiously enough the specimen shot on this high plateau was the only one I saw throughout my journey. Perhaps these birds do not generally arrive in the eastern islands until later in the year. Polatzek does not give a very definite time for their arrival and departure.

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* *Falco barbarus* auct. *cf.* Hartert, Vög. pal. Fauna, ii. p. 1051.

Monte Famara (2244 feet), the highest peak in Lanzarote, lay immediately to our left, the crest obscured by clouds. A fine view of the north of the island was obtained from the summit of the zigzagging road which led down to Haria. We camped about a mile outside the town on the south side, in the most fertile district imaginable, teeming with bird-life. The change from desolate hills and barren plains to this green, well-watered valley, proved very pleasant, and we decided to spend five days at this camp before moving on to explore the northern islets. Many birds were met with for the first time, and indeed I believe several species are confined entirely to this neighbourhood. By glancing at the accompanying map (Plate II.) it will be seen that Haria, a fair-sized but rather "scattered" town, is situated in a valley which is isolated from the rest of the island, surrounded as it is on all sides by hills, and directly cut off from the south by the Famara range over which we had passed. Water is plentiful and in consequence vegetation abundant, mulberry and fig trees, date-palms, cactus-plants, and cereals growing in profusion. To deal first with the species which seemed to be confined to the district, the most plentiful was undoubtedly the Pale Titmouse (*Parus c. degener*); these little birds had full-fledged young on the wing. I found them towards Arrieta up to 1300 feet, climbing about amongst the rocks. Two Chiffchaffs (*Phylloscopus e. exul*) were procured, and one or two others heard. They are very difficult to locate. Spectacled Warblers (*Sylvia c. bella*) were by no means rare; I should think they are on the increase in this valley, but I did not meet with them anywhere else. Turtle-Doves (*Streptopelia t. turtur*), though rare, were evidently found here, as a man brought me two unfledged young from a neighbouring village. I kept them alive and brought them up on gofio, upon which they throve and became very tame. Eventually, after many adventures, they arrived in Gran Canaria, where they still are. During our many moves they never attempted to fly away but would come in and out of my tent, perching even on my hat if nothing better were at hand! The commoner species found here were Hoopoes, Pipits, Spanish Sparrows, Shrikes, and Linnets; the latter, together with the Fuerteventuran Linnet, I have separated from the form found in the western islands, under the name *Acanthis cannabina harterti* (vide Bull. B. O. C. xxxiii. 1913, p. 39). The males of all the Linnets found here had exceptionally crimson breasts, although this is not a character by which they can be distinguished. A fine series was obtained, together with eggs and young birds. Two pairs of Buzzards (*Buteo b. insularum*) haunted the higher peaks, and could often be seen wheeling and screaming high up the barranco west of the camp. By following this barranco for a mile, one suddenly came upon the precipitous cliffs which bound the north-west coast, dropping sheer to the sea 1400 feet. The most extensive views were obtained from this point, and a complete panorama of the flat sandy plain which takes up so much of this part of the island was unfolded. To the north lay the islands of Graciosa, Montaña Clara, Roque del Oueste, and Allegranza, seeming from this elevation to be only a stone's throw away. Three or four pairs of Ravens and many Kestrels lived in these cliffs, and doubtless Egyptian Vultures, Ospreys, and Barbary Falcons had their eyries close at hand. Polatzek found the latter species breeding here and speaks of it in his excellent paper. Rock Pigeons swarmed, and far down below many Herring Gulls (*Larus cachinnans*) were congregated on a ledge upon which it is highly probable they had nested earlier in the year.

An ancient Spanish goatherd told me that he had recently pulled out two White Owls (*Tyto flammea gracilirostris*) from this same cliff, but I had not the luck to fall in with them myself.

I was informed that "Pardelas," i. e. *Puffinus kuhli flavirostris*, nested lower down at the foot of the "Risco," where, however, I was unable to descend in the short time at my disposal. It would be highly interesting to learn if any other species of Petrel has ever been found breeding in Lanzarote. It was near here that Polatzek saw many Eleonore Falcons (*Falco eleonoræ*) in late August. I did not, however, meet with any in this district. Near the town of Haria, Thick-knees were heard every evening. A clutch of eggs was taken on May the 26th, and exceptionally beautiful eggs they were. Curiously enough Swifts were not seen until the morning that we prepared to leave. These were all *Micropus m. brehmorum*. The nights spent at Haria were very cold, the clouds creeping down the mountains and almost enveloping the camp, accompanied usually by a high wind which sprang up about five o'clock. While in this camp I had the pleasure of receiving a visit from Dr. Böttger, an eminent German naturalist, who was making a complete tour of the archipelago. He was on his way south from the northern islets, and had been accompanied part of the time by Herr von Thanner. He gave me the bad news that this ornithologist had been taken seriously ill in Allegranza, and been forced very shortly after his arrival to return to Tenerife empty-handed.

May the 27th, the day we had decided to move on to Graciosa, broke with torrents of rain; throughout the night a violent storm had been raging, and a tearing wind caused us the greatest difficulty in striking camp. The heavy luggage had to be sent on camels via Orsola, while we rode through Haria, past the western slopes of Monte Corona (1940 feet), through thick mist to the summit of "El Risco," where we descended by a precipitous path 1500 feet to the sea-shore. Here we lit a bonfire on the beach to attract the attention of the fishermen on Graciosa, which ancient signal, employed by Mr. Meade-Waldo twenty-seven years previously, is still the only means of communication between the inhabitants of the two islands.

While waiting for the steamer on my return journey to Gran Canaria at Arrecife I made the acquaintance of a local ornithologist, who kindly invited me to view his private collection. The birds were for the most part exceedingly well mounted and included a number of interesting forms. As the entire collection had been formed in Lanzarote by the owner himself, it was of considerable interest.

Besides containing examples of all the commoner species the following were identified without any doubt. It will be seen that several rare stragglers to the Canary Islands are included in the appended list.

List of rare or otherwise interesting species recognised in private collection at Arrecife. All the specimens were said to have been shot in Lanzarote.

Sturnus v. vulgaris (Starling).
Lanius s. senator (Woodchat).
Turdus m. musicus (Continental Song-Thrush).
Cyanosylvia svecica cyanecula (White-spotted Blue-throat).
Jynx t. torquilla (Wryneck).
Cuculus c. canorus (Cuckoo).
Clamator glandarius (Great Spotted Cuckoo).
Asio accipitrinus (Short-eared Owl).
Tyto flammea gracilirostris (Slender-billed Barn Owl).
Falco peregrinus pelegrinoides (Barbary Falcon).
Falco eleonoræ (Eleonore Falcon).

Platalea l. leucorodia (Spoonbill).
Ardea g. garzetta (Little Egret).
Ardetta minuta (Little Bittern).
Querquedula c. crecca (Teal).
Mareca penelope (Wigeon).
Dafila acuta (Pintail).
Phalacrocorax c. carbo (Cormorant).
Glareola p. pratincola (Black-winged Pratincole).
Squatarola squatarola (Grey Plover).
Vanellus vanellus (Lapwing).
Machetes pugnax (Ruff).
Calidris arenaria (Sanderling).
Totanus totanus (Redshank).
Himantopus himantopus (Black-winged Stilt).
Recurvirostra avosetta (Avocet).
Limosa l. lapponica (Bar-tailed Godwit).
Limosa limosa (Black-tailed Godwit).
Gallinago g. gallinago (Snipe).
Sterna s. sandvicensis (Sandwich Tern).
Sterna hirundo (Common Tern).
Larus ridibundus (Black-headed Gull) in breeding-plumage.
Rissa t. tridactyla (Kittiwake Gull).
Fratercula a. arctica (Puffin).
Crex crex (Land-Rail).
Porzana parva (Little Crake).
Porzana porzana (Spotted Crake).
Gallinula c. chloropus (Moor-Hen).
Fulica a. atra (Coot).

GRACIOSA.

I had contemplated staying in this island six days, but owing to the exceptionally heavy seas which were running, we were forced to remain here for double that period: an unfortunate state of affairs which ultimately prevented my visiting Allegranza in person through lack of time.

Graciosa is by far the largest of the five small islands which lie to the north of Lanzarote.

It is 5½ miles in length and 2½ in breadth, having an area of 9½ square miles. For the most part it is flat with four extinct volcanoes upon it, the highest point being 873 feet (by aneroid). The soil is very sandy and in parts the surface is thickly strewn with empty snail-shells. In the south the ground is covered with hummocks which are capped with closely growing plants, such as *Zygophyllum fontanesii* Welb., *Salicornia fruticosa* Linn., *Suæda fruticosa* Forsk., *Atriplex halimus* Linn., and two species of *Traganum*, while a wide belt of sand dunes fringes the shore. Stony plains, stretching to the north and west, surround the large central crater (Montaña de las Agujas), which appears as a mountainous mass rising abruptly from the plain in the middle of the island. The coast-line for the most part is very rocky, particularly on the entire western strand, where the enormous boulders contrast strongly with the flat reefs found on the south and east coasts. The whole shore-line constitutes an ideal haven for Waders of all kinds. A small fishing village has been built on the nearest point to Lanzarote, and from the fishermen who live there we received the greatest kindness. Fine examples—every one of them—of the best type of Spaniard, as yet utterly unspoilt by civilization, which is more than can be said of many of their brothers on the main islands.

I made my camp on the extreme south-east point, and from here thoroughly explored the entire island, ascending all four volcanoes. Living as we did in the midst of many hundreds of Petrels from May the 27th till June the 7th, we were able to see for ourselves the great numbers which come here. I was disappointed that the only Petrel breeding on Graciosa during my visit was *Puffinus kuhli flavirostris*. But these large birds swarm to such an extent that I doubt whether any other species could discover a single nook or cranny in which to deposit their eggs! The fishermen informed me that *Puffinus assimilis baroli* nested in one part of the island earlier in the year, arriving in March and leaving in May. All had disappeared at the time of my arrival, although the remains of their nesting-places could be seen in holes far too small for the Yellow-billed Shearwater to have entered.

The following short list comprises the sum total of the Birds observed in Graciosa during my stay between the

27th of May and the 7th of June; included are one or two species noted by other observers, but which we did not ourselves meet with:—

1. *Acanthis cannabina harterti.*—A single Linnet was seen flying overhead.

2. *Anthus b. bertheloti.*—Resident and breeding. We found them fairly plentiful in certain parts of the island, but not nearly so common as they are in the main islands.

3. *Erythrospiza githaginea amantum.*—Only two small flocks were seen, flying over the camp. We did not come across any on the plains.

4. *Lanius excubitor kœnigi.*—About four pairs were seen. They are evidently resident here, and seem to prefer the sand-dunes between Mt. Amarilla and the camp. One pair was always noticed on a thick patch of Euphorbia scrub near the large central crater. All these birds appeared to be in moult.

5. *Sylvia conspicillata bella.*—Met with in small parties flying about the plains, frequenting chiefly the hummocky ground. There are always four or five together. They are very restless and move about a great deal.

6. *Upupa e. epops.*—Only one example of this bird was seen. It was very wild and had obviously just flown over from Lanzarote.

7. *Tinnunculus tinnunculus dacotiæ.*—About six birds were noticed on the island, all immature. They were remarkably shy and difficult of approach. As we were leaving Graciosa on June the 7th we met several girls carrying baby Kestrels in down, which they had taken from a nest on the western side of the island.

8. *Buteo buteo insularum.*—Meade-Waldo shot a Buzzard here in 1890, which he found living in the walls of one of the craters. I did not observe any myself and did not see any signs of an old nest. They have probably deserted the island.

9. *Pandion h. haliaëtus.*—Often seen round the coasts; there is no suitable nesting-place on this island, but they breed on Montaña Clara, a very short distance away, and almost certainly on El Risco (Lanzarote).

10. *Neophron percnopterus.*—Not resident but often seen. They come over from Lanzarote, where they nest on El Risco.

11. *Puffinus assimilis baroli.*—The Little Dusky Shearwater had already bred and departed, according to the fishermen in Graciosa. They told me that the "Tahoce" came in March and had left Graciosa by the end of May, but that I should still find some remaining on the neighbouring island of Montaña Clara. If *P. a. baroli* does actually breed on Graciosa, I am at a loss to account for the discrepancies between the breeding-season in the two islands. When I arrived in Montaña Clara I found *P. a. baroli* with young in down, of which an account is given in my description of that island (see p. 79).

12. *Puffinus kuhli flavirostris.*—The Yellow-billed Shearwater swarms over the entire island. Three perfectly distinct nesting-sites were chosen, which I shall attempt to describe. When Mr. Meade-Waldo visited the island he explained how "the Petrels burrowed at the foot of the 'Salada Mora' bushes, their roots preventing the sand from filling in." At the present day conditions have changed, and on Graciosa, at any rate, burrows are not often used.

A little to the east of Mt. Amarilla, just above high watermark, lies a mass of huge boulders piled up one upon another, over the top of which loose sand has drifted, the whole being closely overgrown with a scrubby plant. Small gaps are left between the boulders, and through one of these we managed to squeeze; once inside, our electric torches revealed low caves, into which we had to crawl on hands and knees, and from which a network of subterranean passages led in all directions. In these dark recesses, abounding in nooks and crannies, the large Shearwaters were sitting. The glare of the torches dazzled their eyes as they shuffled into crevices and behind loose rocks in their vain endeavour to escape from the brilliant light. No nest of any description was attempted by the birds in these caves.

The islanders catch hundreds of these Shearwaters with the greatest ease, employing a thin almond rod about four feet in length with a small hook at the end. This they thrust into the holes and crevices, dexterously transfixing the occupant through the pinions of the wing and drawing the unwilling victim to the surface. Nesting-places similar to the one just described are found in many parts of the island. On the north coast very rugged cliffs of black jagged lava are to be found, in the numerous crevices of which these Shearwaters were nesting in large numbers.

Another colony had chosen a very different situation on the plain east of Mt. Amarilla, about a quarter of a mile from the sea. Here the birds were nesting in burrows in the earth, which was so hard that it absolutely resisted our attempts to dig out the occupants with a sharp-pointed spade. I imagine the Shearwaters had excavated these burrows themselves, as there are no rabbits on Graciosa whose holes they could make use of. I only found one other small colony on Graciosa, where the birds nested in burrows which likewise were too difficult to excavate.

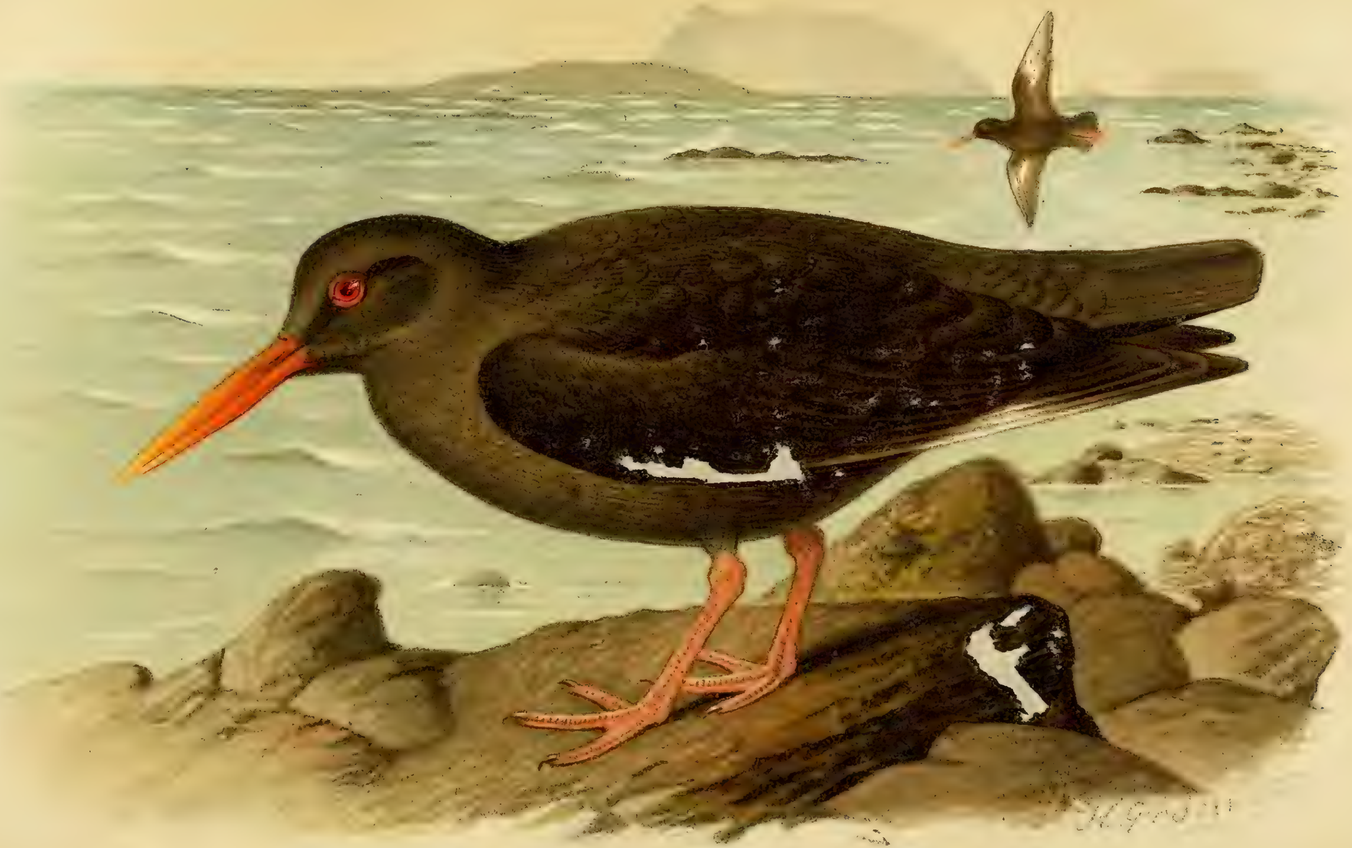
Not content with nesting round the coasts, these birds had resorted in numbers to two of the volcanoes. A few nests were found amongst the lumps of loose lava on the summit of Montaña Bermeja (550 ft), but a considerably larger colony was discovered on the eastern slopes of the big central volcano (Montaña de las Agujas). Here, at an altitude of 300 to 600 ft., the face of the crater was honeycombed with caves, in almost all of which birds were nesting. As this was the most interesting of all the various sites chosen, I will give a short description of my visit on June the 1st. Two fisher-lads acted as guides, and after a weary climb up 600 feet of loose crumbling lava, we gained the entrance to the largest cave, which measured 6 × 3 ft. At one end of this outer cave a narrow tunnel ran into the heart of the mountain, through which, by lying full length, it was just possible to squeeze; after being pulled in front and pushed behind for some fifteen yards, I at last found myself in another small cave, with yet another tunnel leading out of it at right angles to the last. This second tunnel was a little wider, but twisted and turned in the most bewildering manner, gradually opening out into a good-sized cavern which must have been quite twenty yards from the entrance. All the large holes and crevices in the walls of this cave had been utilised by the Shearwaters. A very large number must resort to this particular spot. At this distance from the fresh air an indescribable smell of Petrel greeted our nostrils. The floors of both caves and passages, which were composed of crushed lava, were thickly strewn with the feathers of the birds, and I was unlucky in finding all the occupants out at sea. They had not yet commenced to lay, at any rate in this cave, but we had obtained a fair number of eggs from other parts of the island. The fishermen said that the birds had now come "to clean their nests." The entrance to this lower cave must be three-quarters of a mile from the sea; and although, in the daytime, the birds were often seen flying up and down the strait which separates Graciosa from Lanzarote, yet they never by any chance came to their nesting-holes before darkness had fallen. I took considerable pains to discover what rule governed the comings and goings of these Shearwaters between the sea and their nesting-sites. Living, as I did, on Graciosa and Montaña Clara in their very midst, I hoped to be able to arrive at some definite conclusion on this somewhat little known subject; with this object in view, I made many journeys to different nesting-places after dark. Before laying had become general (*i. e.* during my stay on Graciosa), the majority of the birds would leave their nests before it became light, spending the entire day at sea. They must be excellent time-keepers, for in many cases no inkling of daylight could possibly reach them to warn them that the dawn was breaking. Unless, therefore, they leave their holes before daybreak, while it is still dark, I do not believe that they leave them until dusk, and possibly not until the following morning. If, however, they have been out to sea throughout the day, they return to land about an hour after darkness has fallen (*i. e.* about 8 P.M.). As soon as they begin to come in they commence calling—a long drawn-out wailing note repeated several times, and often answered from within the ground by a peculiar purring sound, which I imagine is made by their mate. The birds would fly round several times in lessening circles close above the rocks, eventually settling at the entrance to their particular hole. It is then possible, by noiselessly creeping over the rocks and suddenly switching a light into their eyes, to approach within striking distance of the birds. Occasionally, while sitting amongst the rocks with lights extinguished, it is possible to "hook" a bird as it glides close overhead. The fishermen are remarkably adept at catching them in this way, although I should imagine that the method is seldom employed.

By June the 7th, the day on which we left Graciosa, nesting had become general, and all the birds had eggs. On Montaña Clara even better opportunities for studying the habits of these Shearwaters were afforded me, but for the nesting-sites chosen by the birds on this island, I must refer the reader to page 80. Although over a hundred birds were caught (the majority being again liberated), I never once found more than one bird in the hole at a time. Both males and females were taken on the eggs, in about equal numbers; the sex of the sitting bird is easily distinguishable, as the male has a much more formidable bill than the female. Only one egg, of course, is laid, and all varied tremendously in shape and size. The measurements will be found under this species in the annotated list (see Part II.). In many cases a perfectly formed egg, completely shelled, was taken from the oviduct of a dead bird.

The Shearwaters called during all hours of the night, but seemed particularly noisy at about 3 A.M., at which time I believe many went out to sea. I think there is no doubt that they take it in turns to sit on the egg, the male feeding while the hen is sitting and *vice versa*. If pulled out of their holes in the daytime they seemed completely dazed, and as often as not made no attempt to escape; others would waddle in the direction of the sea, continually catching their wings in bushes and stones and tumbling about in the most grotesque manner. When thrown up into the air some would immediately fly out to sea, while others seemed to lose their power of flight and would come down "plump" on to the rocks, and quickly waddle away until they could gain a ledge from which to "push off."

The sand in which the Shearwaters had burrowed on Montaña Clara was much softer than that of Graciosa, and I was thus able to excavate there with comparative ease. I found the burrows very similar to rabbit-holes but a little larger; the entrances of several measured 6 × 11 inches and often led 7 feet into the ground. The egg was usually deposited a foot from the further end of the burrow. The passage was generally winding and at times turned completely at right angles. A few feathers and scraps of seaweed were sometimes found doing duty for a nest.

In contrast to these long burrows I was often surprised to find a bird sitting "in broad daylight," having laid its egg in an exposed crevice on the cliffside, not 12 inches from the entrance, where, in the daytime, the rays of the sun shone full upon it. If molested, the Shearwaters bit and scratched with remarkable ferocity, inflicting severe wounds with their formidable bills. As I finally left the breeding-haunts of these Shearwaters on June the 14th, I did not find a single nestling. Several fishermen, who knew their habits remarkably well, told me that the "Pardelas," as they call them, arrived early in April "to clean their nests." As I proved for myself, nesting had become general on June the 1st and all the birds seemed to have laid. The young are hatched early in July, and the fishermen start taking them on August the 5th *for eating purposes*. Many hundreds are taken again in September when the young are exceedingly fat, but they are then boiled down for oil. The men assured me that all the birds leave the island in November, young and old together. In the island of Allegranza hundreds are slaughtered for the sake of their feathers, which fetch quite a good price in Las Palmas.



HÆMATOPUS NIGER MEADEWALDOI.

13. *Columba livia.*—Several pairs were seen on the north coast particularly amongst the sand-dunes.

14. *Hæmatopus niger meadewaldoi* (Plate VI.).—Two specimens of Meade-Waldo's Black Oystercatcher were procured in this island over twenty years ago. Several collectors who in recent years have devoted their energies to procuring examples of this bird, have been forced to return empty-handed. I have separated this subspecies from *Hæmatopus n. niger,* with which it had previously been identified (*vide* Bannerman, Bull. B. O. C. xxxi. 1913, p. 33).

15. *Œdicnemus œdicnemus insularum.*—A pair of Thick-knees was found breeding close to the camp. Only one egg had been laid ; the second, which was very beautifully marked, was taken from the oviduct of a female, shot on the 3rd of June. This pair was flushed the first day we arrived in the island, and after circling round once or twice, flew over the strait dividing Graciosa from Lanzarote.

16. *Ægialites a. alexandrina.*—The Kentish Plover was by far the commonest Wader met with. On Graciosa a young bird was obtained just able to fly, and on the 5th of June we found a nest close to that of a Thick-knee, both within 50 yards of our camp. Although we had suspected both birds of having eggs, we did not discover the nests until we had been in this camp for over a week. The two eggs of the Kentish Plover were laid in a depression of the bare ground between the points of two half-buried stones. The eggs were quite freshly laid. I know of no nest so difficult to discover.

17. *Squatarola squatarola.*—A single flock of Grey Plovers was seen on the reef on the south coast.

18. *Arenaria i. interpres.*—Turnstones were very numerous, the rocky coasts being just suited to them. A few were in full breeding-plumage.

19. *Tringa a. alpina.*—A very few Dunlin were seen.

20. *Totanus nebularius.*—Only one Greenshank was seen.

21. *Numenius a. arquatus.*—Four Curlews were flushed on the hummocky plain at the foot of the Montaña de las Agujas. It would not have been surprising had we discovered them breeding here, as Herr von Thanner recorded the nesting of this species in the south of Fuerteventura (Orn. Jahrb. 1908, p. 213).

22. *Numenius p. phæopus.*—The Whimbrel was met with on all parts of the coast, the rocky pools and exposed reefs being exactly suited to their habits.

23. *Sterna s. sandvicensis.*—According to the fishermen, Terns, or "Garajáos" as the islanders call them, visit Graciosa whenever "Sardinas" are particularly numerous. I did not meet with either the Common or Sandwich Tern anywhere in the islands.

24. *Larus cachinnans.*—The Yellow-legged Herring Gulls are very plentiful in Graciosa, although they do not actually breed there. They were very tame indeed, and frequented the small fishing village in numbers. The chief breeding-station of this species in the eastern islands is the Roque del Este, while others probably nest on the high cliffs in Lanzarote, known as El Risco.

Note.—It is worthy of special notice that no Lesser Black-backed Gulls (*Larus fuscus affinis*) were seen at all during the expedition. This proves more or less conclusively that the species does not breed in the eastern Canary Islands, as I had half expected to find. If any of these Gulls had been breeding on the outer islets the fact could hardly have escaped our notice, as they would undoubtedly have visited the Graciosa fish-curing depot, where we were constantly on the look-out for them. All the smaller islands and rocks, with the single exception of the Roque del Este, were visited by the expedition.

It can therefore be inferred that the western *light*-backed race (*Larus fuscus affinis* Reinhardt) is a regular winter migrant to the Canary group [see my remarks 'Ibis,' 1912, p. 575, and Bull. B. O. C. xxix. 1912, p. 121]; while the eastern *dark*-backed race (*Larus fuscus fuscus*) is a very rare straggler to the islands [see remarks by Mr. Meade-Waldo and myself, Bull. B. O. C. xxxi. 1913, p. 69].

During the greater part of our stay in Graciosa we were subjected to a good deal of inconvenience by the severe wind, which blew almost continuously for a week, and increased to a regular hurricane on the night of June the 3rd. The result was that a very high sea prevented the landing of our baggage on the neighbouring island of Montaña Clara. At length, on the 7th of June, the sea had dropped sufficiently to allow of our making the attempt, and with six sturdy boatmen, all members of one family, we set sail on the never-to-be-forgotten voyage to Montaña Clara! There is only one landing-place, on the south-eastern shore, and this we eventually reached, very wet and miserable. We were all heartily glad to set foot at last on the island, which I hoped to find the most interesting and productive of all the Petrel haunts to be visited. My hopes were fully realized.

MONTAÑA CLARA.

The little island of Montaña Clara lies north-west of Graciosa, from which it is separated by a channel of very turbulent water. Of undoubted volcanic origin, the island is situated approximately 98 statute miles from the nearest African coast (Cape Juby).

Eight days were spent here, from June the 7th to June the 14th, during which time a thorough survey in every direction was made. Montaña Clara is a heart-shaped island, a mile and a quarter in length and three-quarters of a mile wide, and embracing an area of half a square mile. It consists of a single large, but imperfect crater, which occupies the entire northern portion of the island, the walls falling precipitously to the sea, and the highest point rising to 700 feet. The south of the island is occupied by a steep ridge (sloping to the south-east) of lava, scoria, and sandhills, intersected here and there by small barrancos. On this low ground several desert plants flourish, *Launæa spinosa, Suæda fruticosa, Mesembryanthemum nodiflorum*, etc.; but for the most part the whole island is very barren. A single water-hole, entirely dependent on the rainfall for its supply, constitutes the only drinking-water to be found. Apart from two rude stone huts built as rest-houses by the fishermen who occasionally land here, the island is without habitation.

The coast-line is composed of precipitous cliffs, with the exception of the basin on the extreme north, and the ridges on the south-east and south-west. The latter exhibit traces of a recent land-slide, and there is evidence that another heavy fall will take place on the highest part of the ridge in the near future. The result of these land-falls is that the shore-line is strewn with immense boulders, under which *Bulweria bulweri* was found breeding. To my mind the peculiar physical characters of Montaña Clara are solely responsible for the fact that this island (though considerably smaller than Graciosa or Allegranza) is the breeding-place of three, if not four, species of Petrels.

Two events of considerable interest took place during my stay on Montaña Clara. The first was the discovery of a new Chat (*Saxicola* * *dacotiæ murielæ*) which we at first took to be typical *Saxicola d. dacotiæ* in full autumn-plumage. On our return to England, however, further examination proved this to be a new subspecies, which I have described shortly in the Bulletin of the British Ornithologists' Club, vol. xxxiii. 1913, p. 37. I have thought it advisable to include in this paper a more minute description of the bird in question, together with an excellently coloured drawing by Mr. Grönvold (Pl. V.) depicting the adult male in full autumn-plumage and an immature bird of the year. Future workers should therefore have no difficulty in distinguishing between the two geographical races of this *Saxicola*. It must here be noted that this new Chat again turned up in considerable numbers in the island of Allegranza, and altogether a complete series was obtained.

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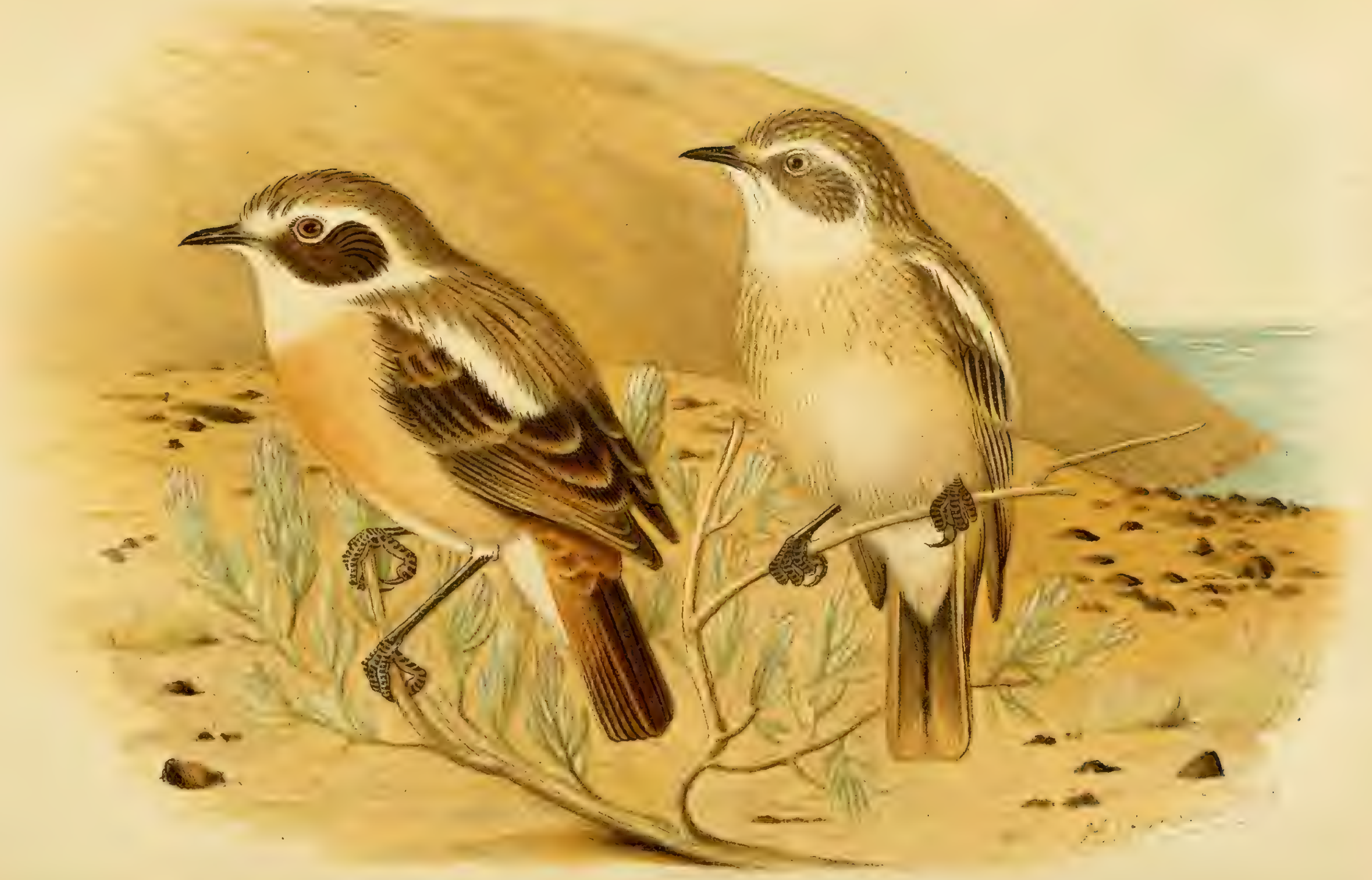
* *Pratincola* auct.



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SAXICOLA DACOTIÆ MURIELÆ.

The following is a List of the Birds seen on Montaña Clara:—

1. *Corvus corax tingitanus.*—A pair of Ravens lived in the high cliffs shown in the photograph (Pl. III. fig. 2); they doubtless breed there every year.

2. *Anthus b. bertheloti.*—Not at all uncommon; all the specimens procured were in full moult. This Pipit probably breeds in the island.

3. *Saxicola dacotiæ murielæ.* (Pl. V.).—The discovery of this Chat, which I met with for the first time in this island and subsequently in Allegranza, proved to be the most notable event of the expedition. Hitherto no ornithologist, least of all myself, had dreamt of finding a *Saxicola* on these small desert islands. It was therefore with no little pleasure that I examined the first two examples which had been shot by Bishop, my taxidermist, two days after our arrival in Montaña Clara. Four or five birds were seen together on the low ridge behind the camp; this was the only occasion upon which they were met with in this island, the party consisting of both adult and immature birds. They perched on the low plants that were growing amongst the lava and sandhills, conspicuous amongst which was *Suæda fruticosa* Forsk., with a pretty purple bloom.

As already mentioned, I published a short description of this subspecies in the October number of the 'Bulletin.' The following is a minute description of the adult male, female, and young bird of the year. A comparison is given between *S. d. murielæ* and *S. d. dacotiæ* in certain plumages:—

Adult male (full autumn-plumage, from a specimen shot on June the 12th).

General colour of the upperparts brownish, each feather with clearly defined wide dark brown shaft-streaks; crown of the head and nape of a darker shade than the back, with small dark brown bases to the feathers; rump and upper tail-coverts light cinnamon-brown with the shaft-streaks very faint; wings dark brown, the primaries edged with dirty white on the inner web and buff on the outer web; secondaries widely margined with buff, as also the primary, median, and lesser wing-coverts; under wing-coverts and axillaries white; scapulars white; rectrices dark brown margined on the outer web with buff; cheeks, lores, and ear-coverts blackish. A conspicuous white stripe extending from the bill over and beyond the eye; eyelids white; chin pure white—the white extending beneath the cheeks and forming a half-collar; chest, breast, belly, and flanks nearly uniform vinaceous buff, rather darker on the chest; under tail-coverts whitish.

Iris dark brown; bill and feet black.

Culmen (exposed) 11 mm.; wing 65; tail 47; tarsus 23.

Adult female. Differs from the male in wanting the black cheeks, lores, and ear-coverts, which are light brown, and in having the entire underparts much paler vinaceous buff.

Culmen (exposed) 11 mm.; wing 60; tail 48; tarsus 23.

Immature birds are, if anything, darker on the upperparts than the adults and can be distinguished at once by the white tips to the feathers of the crown, nape, and hind neck, which give to the bird a speckled appearance. The white half-collar and scapulars are quite distinguishable in the young bird. The chin and throat are less pure white, and the breast is pale buff with minute brown tips to each feather. The flanks are very pale buff, almost white.

Comparison with *Saxicola d. dacotiæ*.—In the worn plumage at the commencement of the autumn moult an adult male, killed on the 12th of June in Allegranza, differs from an adult male of *S. d. dacotiæ*, killed on the 17th of June in Fuerteventura, in having the crown of a lighter and more reddish brown, not showing the marked contrast with the rest of the upperparts. The underparts from the chest downwards are nearly uniform vinaceous-buff, rather more deeply coloured on the upper part of the chest, while in *S. d. dacotiæ* the chest patch is of a rather more rusty tint and the belly and flanks are usually much paler and inclined to whitish.

In full autumn-plumage (see Pl. V. fig. 1) the new subspecies nearly resembles the Fuerteventuran bird, but may be distinguished by having the dark bases of the feathers of the crown smaller and much less pronounced, and, as already mentioned, the breast and belly are isabelline instead of whitish.

Habitat. The Islands of Montaña Clara and Allegranza.

[NOTE.—It will be recollected that up till this time no Chat of any description had ever been found in the Canary Islands, with the important exception of *Saxicola dacotiæ dacotiæ* Meade-Waldo, which is confined to the island of Fuerteventura. By glancing at the map (Pl. II.) it will be seen that the large island of Lanzarote and the much smaller island of Graciosa both lie between Fuerteventura and the two outlying islets of Montaña Clara and Allegranza, upon which the new subspecies was discovered.]

12 examples were obtained.

The types are in the British Museum: ♂. Allegranza, 12. vi. 12; ♀. Allegranza, 10. vi. 13.

I have named this new Chat after my wife, who accompanied me during the first part of the expedition.

I am indebted to the authorities of the Tring Museum for placing their large series of *S. d. dacotiæ* at my disposal, and to Mr. Ogilvie-Grant for examining with me the material in the British Museum.

4. *Delichon u. urbica.*—A single House-Martin was seen on June the 9th. The bird was being pursued by a Falcon, which vainly struck at it several times.

5. *Micropus murinus brehmorum.*—These Swifts were not by any means common. A few were noted on the hottest days. A pair was, I believe, nesting in a hole of the cliff (see foreground of photo, Pl. III. fig. 2). They kept on flying in and out of a hole, and the male bird, which I eventually shot, had the testes very large.

6. *Falco peregrinus pelegrinoides.*—The Barbary Falcon was known by Herr Polatzek to nest on Montaña Clara. On several occasions I saw a Falcon soaring above the high

cliffs on the north-west, and on my last day in the island I obtained a splendid view of the bird at close quarters. I had been sitting waiting for Swifts in the rocky cove seen in the foreground of the accompanying photo (Pl. III. fig. 2), when two Rock Pigeons darted out from a crevice overhead and flew out to sea; hardly had they left the shelter of the overhanging cliff when a Falcon dashed down upon them from above; the Pigeons, flying at a great speed, described a semicircle over the sea, and being soon caught up by their speedy foe, headed again for the cliffs. All three eventually passed over me within five yards of my head. There is little doubt that the bird was a fine example of *Falco peregrinus pelegrinoides*.

7. *Tinnunculus tinnunculus dacotiæ*.—Kestrels were seen on several occasions but were not plentiful. They probably breed on the island.

8. *Pandion h. haliaëtus*.—A pair of Ospreys is resident on the island, and could be seen every day soaring high over the sea.

9. *Neophron percnopterus*.—Two or three Egyptian Vultures were seen on different occasions. They may possibly nest on the high cliffs on the north-west of the island (Pl. III. fig. 2).

10. *Thalassidroma pelagica*.—There is no record of a Storm-Petrel having been taken on land in any of the Canary Islands to my knowledge. I therefore experienced no little surprise when a male specimen was caught and brought to me by the fisherman who had remained with me on Montaña Clara. This man graphically described to me how, having entered a large cave, he had pushed his almond rod into a hole, when out flew the "Alma Mestre" into his face; he had knocked the bird down and brought it to me in triumph. An examination of this specimen showed the testes to be enormously developed, with every indication that the bird was breeding. Unfortunately the cave could only be visited once again before my final departure from the island, and I

was therefore unable to verify my supposition that the bird was nesting there. There seems to be no reason why isolated pairs of *T. pelagica* should not breed on such deserted islets.

11. *Puffinus assimilis baroli.*—The Little Dusky Shearwater, concerning which so much discussion has recently taken place, was found breeding on Montaña Clara. I had certainly not expected to meet with this usually very early breeder in any of the islands so late as June the 7th. The fact that we actually took eggs as well as the young in all stages, shows that there is great variation in the time of breeding of this species in the different islands of the group. It will be recollected that if the fishermen are to be believed, and I have often proved their statements to be correct, *P. a. baroli* had already bred and left the island of Graciosa by the 27th of May. Mr. Meade-Waldo took the young of this species in Tenerife on April the 26th, and an adult on March the 16th with the bare hatching spot on its breast.

Shortly before our arrival a party from Haria had specially made the journey to Montaña Clara to collect "Tahoces," as *P. a. baroli* are locally called. Whether these individuals had succeeded in making a good haul I did not learn, but the only breeding-station which existed contained a very small number of birds. To reach this colony it was necessary first to ascend the mountain and having crossed the plateau, which lies at the summit, to descend the almost perpendicular inner wall of the crater to the floor beneath. In this basin, one side of which lies open to the sea, the Little Dusky Shearwaters were breeding under the huge rocks which had fallen from above. It being impossible to reach this spot after dark, I was unable to obtain, as I had hoped, a series of adult birds, although several had practically attained mature plumage and could only be distinguished by one or two downy filaments still adhering to the feathers on the flanks. Only two eggs were obtained and a few nestlings in down.

12. *Puffinus kuhli flavirostris.*—These Shearwaters were as numerous in this island as in Graciosa. They were nesting under the shelving strata just above sea-level, in burrows amongst the sandhills, under the loose lava lumps on the mountain side at 600 ft., and again in burrows on a plateau at the summit of the volcano. Our camp, situated on the lowest ridge, was surrounded on all sides by their nesting-holes, and as a result sleep for the first two nights was almost impossible.

As I have given a long description of the habits of this Shearwater in my account of the Birds of Graciosa (pp. 66–70), it is unnecessary to add more, but it may be noted that, on my arrival in this island on June the 7th, every bird had commenced to sit.

13. *Bulweria bulweri.*—This was the only small island on which we found Bulwer's Petrel breeding. Here, however, they were quite common, although their numbers seemed but scant in comparison with those of the large Shearwaters! By far the most attractive in appearance of all the Petrels, these sombre-coloured little birds were breeding all round the island under the large boulders which had fallen from the cliffs. They were most common in the actual neighbourhood of my camp, where many of their nesting-sites were under rocks only just beyond the reach of the waves. Holes were sometimes utilised, and we found two close together about 40 ft. up the side of the cliff, each containing a bird. We dug these holes out and found the birds sitting about 2 ft. from the entrance. In no case was there any attempt at a nest, the single egg being deposited on the bare stone. At the time of my visit all the birds had laid. In one case a fisherman brought in two eggs, which he assured me he had found in the same "nest" lying side by side, doubtless the product of two females. All the eggs were freshly laid, and I gathered from the fishermen that the birds had not long come to land.

Bulwer's Petrel is almost entirely nocturnal in its habits, and we never saw any flying in the neighbourhood of the island during the day. If pulled out of their holes these birds seemed very dazed, but invariably attempted to escape by crawling under stones. In one case, however, a bird which we had placed on a rock in the brilliant sunlight waddled to the edge and immediately flew out to sea.

The local name for this Petrel is "Perrito." I never heard it called "Tahoce negro," as recorded by Mr. Meade-Waldo; very probably the latter is the name used for the bird in Tenerife, for a considerable difference exists in the local nomenclature of individual species in the various islands. A large series of these little Petrels was obtained together with their eggs, but all were adult birds, the young having not yet hatched. Montaña Clara is the only island on which *Bulweria bulweri* was met with.

14. *Columba livia.*—Not very plentiful but several pairs are resident in the lava cliffs on the north-west coast. I should think that they have difficulty in finding sufficient food.

15. *Larus cachinnans.*—So far as I can tell, the Yellow-legged Herring-Gull does not breed on Montaña Clara. It is, however, very plentiful round the coast, and many birds roosted at night-time on the north-eastern cliffs. Occasionally the fishing-boats put in here to pass the night, and at such times the Gulls simply swarmed, fighting and screaming for the remains of the fish cleaned by the men.

L. cachinnans was the only species of Gull met with.

ROQUE INFIERNO, OR THE WEST ROCK.

While staying on Montaña Clara I arranged to visit on the first possible occasion, the Roque del Oueste, an isolated mass of lava lying almost due north of Montaña Clara. Accordingly on June the 11th my boatmen arrived from Graciosa and we set out for the rock. The sail was not the most enjoyable I have had! We were all soaked to the skin long before we drew near to the Roque Infierno, which has been rightly named indeed! Over half an hour was spent in attempting to bring the boat alongside, and when at last we were able to jump ashore we were almost up to our waists in water. This is the smallest of all the islets and covers an area of some 40,000 square yards. Composed entirely of jagged lumps of black lava heaped one upon the other, the highest point is only 30 feet above sea-level. I climbed all round the rock, and although I had been informed that there were no birds on it, I found numbers of large Shearwaters (*P. k. flavirostris*) nesting in the holes and crevices.

This was the only member of the Petrel family encountered, but several other birds were seen; most interesting of these was a Falcon which appeared to be very blue in colour. It was very probably the same bird that I had seen in Montaña Clara, but the sun being directly behind the bird I did not get a clear view of it. A pair of Ospreys was sitting on the rock as we approached, and a Kestrel hung poised in the air above a small gathering of Yellow-legged Herring-Gulls. Four species of plants were found growing amongst lava blocks, but unfortunately all my samples were destroyed before they could be identified. An ice-plant (*Mesembryanthemum nodiflorum*), which grew in patches, appeared to be fairly common. Specimens of *P. k. flavirostris* and their eggs were collected here. I had hoped to find *Bulweria bulweri* breeding, but in this I was disappointed.

THE EAST ROCK.

After visiting the West Rock I was forced to abandon all idea of landing on the East Rock, which lies in a much more exposed position than even the first named. Situated 7¼ miles from Lanzarote, "El Roque," as the fishermen call it, has an area of roughly 125,000 square yards. The following is a short description of the island by Dr. Karl Sapper (*vide* Petermann's Mitteilungen, vol. 52, 1906, pp. 173–184):—

"The Roque del Este shows two summits, one in the S.W. of 65 m. and a second in the N.E. of 81 m. South-east of the latter an eruptive mass starts out of the sea like a watch-tower, the Campanario del Roque del Este. Both peaks belong to the south-west wall of a great crater the bottom of which is covered by the sea."

"El Roque" is plainly seen from Lanzarote, and its precipitous cliffs look highly formidable from this distance. It is noteworthy chiefly on account of the Gulls, *Larus cachinnans*, which breed there in April. I enquired of the fishermen whether they had ever seen a large Black-backed Gull amongst the others; they did not, however, appear to know the bird, although *Larus marinus* is said to breed on one of the deserted islets. A number of eggs of the former species, which had been taken earlier in the year, were brought to me. The fishermen told me that two Falcons "were eating up all the seafowl on the Rock"! As I could not land there I did not discover what Petrels were breeding, if any. I had hoped to find a breeding-station in the Canary Islands of the pretty little Frigate Petrel (*Pelagodroma marina*). The fishermen, who knew the bird well, informed me that they seldom saw it in the Canary Seas, but said it was to be found in hundreds round the Salvage Islands, which is, of course, true. In the Canary Islands the bird is called "El bailerino" —*i. e.* The Dancer—from its habit of dangling its legs on the waves. It is curious that it does not breed in the Canary Archipelago, as it does so in the Cape Verde and Salvage Islands.

Having spent so much of our precious time imprisoned in Graciosa, owing to the inclement weather, I was forced, as I have already mentioned, to give up any idea of visiting Allegranza in person, and therefore decided to send my taxidermist to that island, while I remained on, and thoroughly explored, Montaña Clara. Two days after our arrival in the latter island I sent Bishop to Allegranza, arranging to meet him in seven days' time at Haria in Lanzarote, from which town we were to begin our journey homewards. The two islands were therefore worked concurrently, and the adoption of this plan was quite justified by the results. Bishop spent six days (June 19-14) on Allegranza and made a thorough report on the birds found there; he also supplied me with a useful sketch-map of the island and took a number of photographs, from all of which I have drawn up the following account.

ALLEGRANZA.

Situated 5½ miles due north of Montaña Clara and 103 miles from the African mainland, Allegranza is the extreme northerly member of the Canary group. Almost round in shape the island is larger than Montaña Clara, being 2¾ miles long by 2¼ broad, and having an area of 3¾ square miles.

At the western end an immense extinct volcano—Montaña de la Caldera—rises to 940 ft., and on the south-east coast two smaller craters rise abruptly from the sea. The rest of the island is for the most part flat and consists of low hills, lava slopes, and stony plains.

The usual vegetation of the eastern islands is met with, including low Euphorbia bushes with enormously thick stems. Here and there patches of wheat have been cultivated on the plains, but for the most part the island is unproductive.

Allegranza possesses a lighthouse built on a low neck of land on the extreme eastern point. Both from the Keeper of this lighthouse and the Majordomo who looks after the island for the owner, my party received the greatest possible kindness.

Ornithologically Allegranza proved highly instructive, for considering the isolated position which it holds, a surprising number of apparently resident species were recorded. The most noteworthy occurrence was, of course, that of the new Chat, but amongst other interesting species may be specially mentioned *Tyto flammea gracilirostris, Buteo buteo insularum*, and *Œdicnemus œdicnemus insularum*.

Only one form of Petrel was found here—*Puffinus kuhli flavirostris*; but, as in Graciosa, it seemed to monopolise every hole and cave available.

It has been said that the Manx Shearwater, *Puffinus p. puffinus*, breeds on Allegranza (Webb & Berthelot, Ornithologie Canarienne, 1841, p. 43). It has also been cited by Cabrera y Diaz (Catálogo de las Aves Archipielago Canario, 1893, p. 65), who remarked that "it is common in the eastern group, where it nests on the deserted rocks."

Mr. Meade-Waldo (Ibis, 1893) stated that the bird did not seem to come to land.

Specimens are rarely captured in the Canary Islands, and I believe that when they are it is invariably in the winter, during which months they are sometimes fairly common. I could not discover any evidence of this bird having bred here in recent years.

Another Petrel which has been reported as nesting on remote rocks of the Canary Islands is *Oceanodroma castro.* This bird has been found breeding on the Azores, Porto Santo, the Desertas (off Madeira), the Salvages, and the Rombos Islands in the Cape Verde group. Up till the present, however, I am not aware that any authentic case has occurred of its breeding in the Canary Archipelago.

Messrs. Webb and Berthelot and Dr. Bolle mention the Great Black-backed Gull (*Larus marinus)* as breeding in the island of Allegranza. I did not meet with the species myself, nor could I gather any information which might lead me to suppose that *L. marinus* nests on the island at the present day.

The following is a list of the birds observed :—

1. *Corvus corax tingitanus.*—Only one seen. Formerly the Raven was said to be plentiful in Allegranza. They have, however, been killed off in late years.

2. *Acanthis cannabina harterti.*—Scarce and very shy.

3. *Anthus b. bertheloti.*—Very plentiful and in full moult.

4. *Erythrospiza githaginea amantum.*—A flock of Trumpeter Bullfinches was seen in one of the craters.

5. *Sylvia conspicillata bella.*—Only one Spectacled Warbler was seen.

6. *Saxicola dacotiæ murielæ.*—The Chats were chiefly found in one part of the island, frequenting barren stony country and low hills covered with Euphorbia and other desert vegetation. They were also seen in the small crater on the south-eastern coast; they were usually in parties of three to five, and everywhere decidedly plentiful. Both adults in full autumn plumage, and immature birds were obtained.

The Majordomo, who knew the bird well, asserted that they bred in the island and were resident throughout the year.

7. *Hirundo rustica.*—A single Swallow was seen flying over the island in a north-east direction.

8. *Delichon u. urbica.*—Quite a number of House-Martins were seen. They are said to breed regularly in a cliff on the south coast.

9. *Micropus murinus brehmorum.*—Only three examples of this form were seen.

10. *Upupa e. epops.*—Only one Hoopoe was seen. It was very shy.

11. *Tyto flammea gracilirostris.*—Two Barn Owls were seen. There are said to be two or three pairs here which breed annually on the island. They are very difficult to obtain.

12. *Falco* sp. incog.—A small Grey Hawk was seen on one occasion, but was unfortunately not procured. I cannot conjecture what it could have been. The only small greyish Hawk which has ever been taken in the Canary group appears to be *Falco v. vespertinus*, but one would hardly expect to find this species turning up in the Canary Islands at the time of year we were there.

13. *Tinnunculus tinnunculus dacotiæ.*—Kestrels were quite common and are said to be resident here throughout the year.

14. *Buteo buteo insularum.*—Three or four Buzzards were seen together in the crater on the south-east coast.

15. *Pandion h. haliaëtus.*—Fairly plentiful and breeding on the island. There is an eyrie on one of the smaller volcanoes, the side of which falls abruptly to the sea.

16. *Neophron percnopterus.*—A pair was seen, said to be the only one on the island, where they probably breed.

17. *Ardea cinerea.*—Only one example was seen.

18. *Puffinus assimilis baroli.*—This Shearwater does not, so far as we could gather, breed on Allegranza. Individuals are said occasionally to strike the lantern of the lighthouse during the early part of April. None were seen by my party.

19. *Puffinus kuhli flavirostris.*—Very plentiful. Breeds everywhere on the island both inland and round the coast wherever holes are available.

20. *Columba livia.*—Very few Rock-Doves were seen.

21. *Œdicnemus œdicnemus insularum.*—The Thick-knee was found to be fairly plentiful and breeds in the island.

22. *Larus cachinnans.*—Very scarce.

Return Journey to Gran Canaria.

On June the 14th I left Montaña Clara and began my return journey to Arrecife. The friendly fishermen arrived very early in the morning, as previously arranged, to take me off, and by 9.30 A.M. the collecting boxes and tents were all safely stowed away in the boat. A considerable delay was occasioned by my two Turtle-Doves, which could not be found. Over half an hour was spent in searching for them, and they were at length discovered enjoying a sunbath in the warm soil; their plumage harmonised so exactly with the colour of the earth that even the sharp eyes of the fishermen could not detect them—an excellent instance of colour protection. Having sailed across the intervening strait, I landed once again on Graciosa and walked across the island to pick up the boat at the fishing village. From this point we sailed to the foot of El Risco, and having said goodbye to the owners of the "San Francisco," began the heavy climb up 1500 ft. to the summit. My baggage I sent round to Orsola on the north coast of Lanzarote, where camels were to meet it and await the other boat from Allegranza.

Birds were scarce, and only Kestrels and Rock-Pigeons were noted on the way up. As usual, a bank of cloud lay like a blanket along the ridge. We found our camel sheltering in a hollow, its owner wrapped closely in a huge overcoat to protect him from the cold wind. The thermometer which I carried registered 100° in the shade while crossing Graciosa, and the change to driving mists and a cold wind was very unpleasant. As we descended to Haria the mists disappeared, and we obtained a fine view of Monte Corona. It is from this crater that a gigantic lava-flow runs, upon which the Barbary Partridge is said to be found—the only locality frequented by this species in Lanzarote, while Partridges are entirely absent from Fuerteventura.

On the plains surrounding Monte Corona very many Ravens (*Corvus corax tingitanus*) were seen, but they were, as usual, exceedingly wary. "El cuervo sabe mucho" is a local saying with no little truth in it!

As we neared Haria an unusual number of Kestrels, nearly all immature birds, were noticed. Eight or nine were seen together hovering over a small field. Having passed through the town we camped for the night close to the road, and the following day proceeded to Puerto Arrecife, where we spent our last night under canvas preparatory to boarding the steamer the following evening. Arrecife is anything but a pleasant town, and as we arrived on a Sunday our camp was soon surrounded by the entire idle population of the port! Throughout the following day long strings of camels kept passing into the town, all heavily laden with onions, of which a prodigious number must be shipped annually from Lanzarote.

During the evening of June the 16th, we boarded the new interinsular steamer and finally left Arrecife at 2 A.M. *en route* for Puerto Cabras, where we dropped anchor after three and a half hours at sea. As we had arrived here so early in the morning, I determined to go ashore at once and attempt to shoot some more Sand-Grouse, as they came in from the plains. While in this town I was presented with a fine young Bustard which had died in captivity; and after adding to my series of Swifts many which were hawking over the plain, I again boarded the 'Corréo' and coasted to Gran Tarajal—an insignificant port, which was reached early in the afternoon.

A heavy surf runs in here, and as no boat could ground with safety on the beach, we were carried ashore on the shoulders of the Spanish lightermen, getting uncomfortably wet during the process!

The Valley of Gran Tarajal, which we set out to explore, is thickly lined with tamarisks, as its name implies. No vegetation was growing on the sides of this barranco, which were rugged and barren, and from the crevices many Rock-Doves dashed out as we passed.

In the tamarisks a number of birds were noted, the most interesting to me being *Sylvia c. bella*; this was only the second time we had met with the Spectacled Warbler in Fuerteventura. Shrikes, Hoopoes, Trumpeter Bullfinches, Pipits, and Chats, were all noticed in turn, the latter being found even on the beach. As we continued up the valley a pair of Egyptian Vultures flew leisurely overhead, keeping as usual well out of gunshot. I was much interested to see a black Falcon flying along the edge of the barranco—the bird passed close to me and struck at some tame Pigeons which were circling round a house. This could only have been *Falco eleonoræ*, its long pointed wings being very conspicuous during flight. As we proceeded the valley opened out—the tamarisk scrub became thinner and the ground was partially under cultivation. Immediately before us a group of low hills, at the foot of which clumps of date-palms were growing, lent an unusually tropical effect to the scene, and beyond this again we caught a glimpse of the great plain stretching to the distant mountain-chain.

The low hills in the foreground obscured the village of Tuineje, which immediate neighbourhood may be considered the true home of *Chlamydotis undulata fuerteventuræ*, *Cursorius g. gallicus*, and *Pterocles arenarius*.

As the sun was rapidly sinking we were forced to leave this fascinating scene and retrace our steps to the shore. Nothing of further interest was noted until we had almost gained the beach, when a pair of Thick-knees was flushed. No Waders of any description were met with on this part of the coast, the Yellow-legged Herring-Gulls holding entire sway.

In the account of this trip I have attempted to give some idea of the physical features amongst which the birds live in these intensely interesting islands. The account would not be complete without a short description of the narrow peninsula forming the southern neck of Fuerteventura. From the deck of our steamer a clear view was obtained, on more than one occasion, of the "Matas Blancas," an eight mile stretch of absolutely bare sand dunes forming an isthmus between the main island and the mountainous mass known as the Orejas de Asno. The highest peaks of these rise to 2770 ft., which is the greatest elevation reached by any mountain in Fuerteventura. Beyond the Asses' Ears is a bare plain which culminates in the rocky headland of Punta Jandia: this is probably the best spot in the entire group for observing the migrations of the Charadriidæ, of which a considerable number of species must touch on this unfrequented part of the coast.

The only sign of habitation is the lonely lighthouse built on the extreme south-westerly point—the last we saw of Fuerteventura as the little steamer passed beyond the shelter of the land on the final stage of our journey to Gran Canaria.

Explanation of the Plates.

Plate II.		Map of the eastern Canary Islands, showing the route followed.
Plate III.	Fig. 1.	A typical tamarisk valley in Fuerteventura.
„	Fig. 2.	North-west cliffs of Montaña Clara.
Plate IV.	Fig. 1.	The home of *Saxicola dacotiæ dacotiæ*. A barranco on the west coast of Fuerteventura.
„	Fig. 2.	Montaña Clara, Roque del Oueste and Allegranza, showing Graciosa in foreground.
Plate V.	Fig. 1.	*Saxicola dacotiæ murielæ*, adult male in full autumn plumage.
„	Fig. 2.	*Saxicola dacotiæ murielæ*, immature bird of the year.
„ VI.		*Hæmatopus niger meadewaldoi.*

[To be continued.]

IV.—*A List of the Birds of Melville Island, Northern Territory, Australia.* By Gregory M. Mathews, M.B.O.U.

Melville Island lies to the north of Darwin in the Northern Territory of the Australian Commonwealth, at the mouth of Van Diemen Gulf. From Darwin it is distant between thirty and forty miles, and about the same distance from Port Essington. Taking Melville and Bathurst Islands together, the length from extreme east to west is one hundred and twelve miles, and from north to south about fifty-six miles between their extreme points.

Melville Island was discovered by Captain Phillip P. King, in the 'Mermaid,' on May the 12th, 1818, and named after the then First Lord of the Admiralty, Viscount Melville.

A few years later the British Government of the day was considering the idea of settlements somewhere on the north coast of Australia. Port Essington was first thought of, but on the ships (containing everything necessary to form a settlement) going to that place, it was considered by those in authority that fresh water was not abundant enough, so Melville Island was selected, and on the 30th of September, 1824, a settlement was formed on Apsley Strait. On account of the continued hostilities between the whites and blacks it was decided to abandon the settlement; so, on the 31st of March, 1829, everything was removed to Raffles Bay, which had been founded on the 18th of June, 1827, in anticipation of the failure at Melville Island. In October 1887, an exploring party went across the Island (*cf.* Trans. Roy. Soc. South Austr. vol. xv. 1892, p. 114).

The greater part of the island is covered with Eucalyptus forests; the principal feature of the undergrowth is the large number of cycads, the place of which is sometimes taken by small fan-palms.

It is well watered by many small creeks which usually empty into the head of a large tidal creek. The only large creek (Jessie) is in the north of the island ; it runs through a large area of low-lying ground near the sea. This tract is flooded by the creek and forms the only large swamp on the island. The swamp varies in depth from a few inches to several feet, and is the home of many large crocodiles and forms their breeding-ground.

This swamp is a strange place; it is situated at the head of a salt-water arm, and is about three miles wide by eight long. So far as could be judged, it was covered with reeds, but not thickly. Through the centre runs Jessie's Creek, which is about fifty yards wide and about ten feet deep. This creek is bordered with white and blue water-lilies. On the upper portions of the swamp is a great forest of Paper-bark trees, growing in the water, which varies from six inches to three feet in depth. There are masses of undergrowth here, also reeds, a cane-like plant, sword-grass, and rushes, so that it is almost impossible to get through. This growth of reeds, sword-grass, etc., continues up the creek for some miles, but the Paper-bark trees get fewer as one advances into the drier ground.

The only plains on the island lie about 10 miles east of Gordon Point. The patches of jungle are small and scattered far apart. During the wet season, which usually starts in December and ends in March, about 70 inches of rain falls. In October and November occasional heavy thunderstorms occur.

Buchanan's Islets, which lie about two miles from Melville Island and off the south-east end of Apsley Strait, which divides Melville from Bathurst Island, consist of a large patch of mangroves with a high sandy beach on the seaward side and a few small sand-dunes on the eastern end. This place was a great stronghold of all the Waders, the beaches being thronged with thousands of them at high tide.

The classification and nomenclature used, is that of my new 'List of the Birds of Australia.'

1. **Megapodius duperryi tumulus.** Western Scrub-Fowl.

Megapodius tumulus Gould, Proc. Zool. Soc. 1842, p. 20: Coburg Peninsula.

On the 1st of December, 1911, a nesting-mound of this species was found in a narrow belt of jungle growing along a small creek. It measured twelve feet in diameter and four high, and had holes burrowed into it in all directions. The pair of birds was at the mound, and the female had a fully developed egg in the oviduct.

As the mound was approached the male flew into a neighbouring tree, and at the sound of the shot the female, which was in the bottom of a hole about two feet deep, flew into the same tree. This was at the edge of the jungle, and only shaded from the sun on one side.

Other mounds were seen, the largest being about ten feet high, with a circumference of thirty-five yards at the base; their shape is an irregular cone, the average size being six feet high and fifteen in diameter; they are placed near the edge of the jungle; this is in small patches, the largest being about 150 acres.

The breeding-season is from November to January.

2. **Synoicus ypsilophorus cervinus.** Northern Brown Quail.

Synoicus cervinus Gould, Handb. Birds Austr. vol. ii. 1865, p. 195: Port Essington.

On the 12th of October several small flocks were seen about the camp. The various coveys seem to have favourite localities, as one can always be sure of seeing some in certain places. About the 7th of December they seemed to be pairing. By the 2nd of February, 1912, they had all paired and were difficult to flush, as the grass was long and dense; by March they were in large coveys accompanied by many young birds.

3. **Turnix maculosa pseutes.** Western Black-backed Quail.

Turnix maculosa pseutes Mathews, Nov. Zool. vol. xviii. 1912, p. 180: Parry's Creek, North-west Australia.

Very rare on the Island.

4. **Austroturnix castanota melvillensis.** Melville-Island Chestnut-backed Quail.

Turnix castanota melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 27: Melville Island.

On the 10th of October these birds were common, many large coveys being seen. Sometimes when flushed they rise in a bunch, as though they had been close together on the ground, only one or two stragglers remaining; at others they rise in singles, twos, or threes, as though they were scattered, perhaps feeding. They are a good sporting bird, as they can usually be flushed again if marked down, for they seldom run more than a few yards. After a shot, and the birds are scattered, one can hear low moaning calls, which gradually cease as the covey gets together again. Usually each covey keeps to the same locality. As many as twenty have been seen in one lot, but twelve would be about a fair average.

On the 15th of November a covey was approached cautiously, and the females were seen to be chasing the male birds round and round until the latter flew a few yards away. This was repeated again and again. One female was shot to be quite sure of the sex.

On the 10th of March, 1912, the females had large eggs in their ovaries.

5. **Ptilinopus regina ewingii.** Rose-crowned Fruit-Pigeon.

Ptilinopus ewingii Gould, Proc. Zool. Soc. 1842, p. 19: Port Essington.

These Pigeons seem to be distributed all over the Island. They usually perch amongst the dense foliage in the patches of jungle growing along the creeks, which makes them very difficult to see. When disturbed they fly away at great speed, usually keeping above the tops of the trees. They feed on a fruit like a large cherry, and usually some birds are found in every tree with ripe fruit. They nest in January and are non-migratory.

6. **Myristicivora bicolor spilorrhoa.** Nutmeg-Pigeon.

Carpophaga spilorrhoa Gray, Proc. Zool. Soc. 1858, p. 186: Aru Islands.

Nest. This was built in the horizontal fork of a mangrove about eight feet from the mud, and consisted of a few small twigs, and was most frail. A second nest, built in a stout fork of a Paper-bark tree, growing in the great swamp, was placed about twelve feet from the water; it was very frail, and the egg could be seen through the nest. The portion of the nest that could be so called, measured six inches by six, but the ends of the twigs projected out beyond this.

Eggs. The clutch consists of one white egg measuring 41 mm. by 34.

On the 2nd of October these birds were seen and heard in the mangroves. They came to some trees near Apsley Straits every day to feed, both in the morning and, again, about four o'clock in the afternoon. They were never in flocks or very plentiful. On the 1st of December a nest was found in a tree in the open forest, the bird was only dislodged after several sticks were thrown at her; after she had left the nest a small young one was found, on which she had been sitting. This nest was about thirty feet from the ground.

On the 15th of December a flock of five was seen; this was the greatest number noticed together. On the north side of the Island they were numerous, and two more nests were found, both in very tall trees and placed about sixty feet from the ground.

On the 14th of January, 1912, several small flocks were seen, all flying high, and in the sixteen days ending on the 3rd of February only one bird was noticed. After the 18th of March they had all disappeared.

7. **Chrysauchœna humeralis apsleyi.** Northern Barred-shouldered Dove.

Geopelia humeralis apsleyi Mathews, Austral Av. Rec. vol. i. 1912, p. 27 : Melville Island.

Very numerous, found feeding in companies of up to 30 birds. When flushed, these flocks split up into threes and fours. It may be that the small flocks come together on extra good feeding-grounds, until one large flock of 30 or so get together. They were plentiful towards the end of October, but decreased in number by the middle of December, and were again numerous on the 13th of January, 1912, on the north side of the Island on the ridges bordering the great swamp. There was good cover for them there in the low bushes with plenty of vines growing over them.

8. **Geopelia placida placida.** Northern Ground-Dove.

Geopelia placida Gould, Proc. Zool. Soc. 1844, p. 55: Port Essington.

These birds are very numerous, and are seen in parties of six or seven individuals. On the 10th of October a nest containing two very small young ones was found. This was built in a horizontal limb of a small Paper-bark tree growing in a patch of scrub. It was composed of a few twigs, and fell to pieces when touched, and was placed about ten feet from the ground.

It seems a stationary bird, as it is plentiful on Apsley Straits, but rare on the north side of the Island; only one pair was seen there, on the 14th of January, 1912, and this was in the centre of the great swamp, about a mile from solid land. It is non-migratory.

9. **Chalcophaps chrysochlora longirostris.** Long-billed Green Pigeon.

Chalcophaps longirostris Gould, Birds Austr. vol. i. Introd. 1848, p. lxix: Port Essington.

Not plentiful. They seem to feed near the mangroves, and when flushed sometimes fly into a tree about thirty yards away, or if disturbed in a patch of open scrub, about half a mile from the mangroves, they fly through it, keeping near the ground, and alight either on the latter or in the lower branches of the scrub. They left in December, but on the 3rd of June, 1912, a pair was flushed and the female had a soft-shelled egg in the oviduct. During this month they were common and were usually found on a ridge. On the 7th of June two immature birds were shot, and apparently they breed at any time of the year, as in November half-grown ones were collected, and they were nesting in June.

10. **Phaps chalcoptera consobrina.** Northern Bronze-winged Pigeon.

Phaps chalcoptera consobrina Mathews, Nov. Zool. vol. xviii. 1912, p. 188 : Parry's Creek, North-west Australia.

Not numerous, but usually a few are seen every day feeding under the wattle-trees near the mangroves either singly or in pairs. On the 6th of November several young birds were noticed, fully feathered, but still very small. They were not accompanied by their parents, but were usually in pairs. After the 7th of December none were seen until the following June.

11. **Terraphaps smithii smithii.** Naked-eyed Partridge-Pigeon.

Columba smithii Jardine and Selby, Illustr. Ornith. vol. ii. 1830, pl. 104 : Northern Territory.

These birds are very numerous, and usually found in flocks numbering up to twenty birds. They lie very close and generally rise at one's feet. Sometimes the whole flock will spring up in a bunch from the same spot, but more often in ones and twos. It is difficult to see them when they are on the ground, unless they move. When flushed they either fly into a tree near by or shoot up clean over the tree-tops and away. The timber is too tall and thick to see how far they go. They feed on the large black seeds of the common Eucalyptus of the island. This tree is a fine straight one which bears many large seed-vessels. Later in the season they feed on grass seed and become very thin.

When scattered, the call-note is a low moaning "*coo*" repeated many times until the flock is gathered again. On the north side of the Island they seemed rare, but in February 1912 they were quite plentiful near Apsley Straits. They were very fat and the skins tender. They are one of the best table-birds Mr. Rogers has ever eaten.

The allied subspecies, which Mr. Rogers collected in different parts of north-west Australia, also feeds on the seeds of this same kind of Eucalyptus tree (Wollybutt).

12. **Eulabeornis castaneoventris melvillensis.** Grey Chestnut-bellied Rail.

Eulabeornis castaneoventris melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 29: Melville Island.

This was the first bird's call heard on Melville Island by Mr. Rogers. Near Derby he was able to bring this Rail up to him by beating two sticks together. The nest on the Island was built on a fallen mangrove in the centre of a large patch of this timber, and placed about four feet from the mud. The materials were coarse twigs, and the nest was of the usual straggling build and exactly resembled those found in the north-west of Australia.

The natives of Melville Island confirm what the natives of Port Torment in north-west Australia say—namely, that this bird cannot fly.

Two eggs were collected near Apsley Straits on the 6th of November; these have the ground-colour light stone or buff, sparingly covered with dots of dull red and lavender, and measure 52–54 mm. by 36·5. The clutch generally numbers four or five.

13. **Poliolimnas cinereus leucophrys.** Northern White-browed Crake.

Porzana leucophrys Gould, Proc. Zool. Soc. 1847, p. 33: Port Essington.

This bird was numerous on the north side of the Island in the great swamp.

Nest. Bowl-shaped, and placed in a half-dead bunch of water-lilies and reeds. It consisted of dead and green rushes bent down and interlaced. Inside this outer foundation was the nest proper, composed of short pieces of dead rushes, which were interwoven into the outer nest. The bottom was lined with short pieces of dead rushes. The measurements are: outside 9 by 9 by 8 inches deep, inside 4½ by 4½ by 2 inches deep. It was found on the 12th of January, 1912.

Eggs. Clutch four; ground-colour pale stone, covered all over, but more thickly at the larger end, with reddish-brown spots; a few lavender ones are also distributed over the surface. Axis 28 mm., diameter 21.

Many old nests were found, similar to the above-described one. They are somewhat like the nests of the Bald Coot, only smaller, but they are large for so small a bird.

This Crake is rather noisy (in January, at any rate). One has difficulty in seeing it, but when one hears the sound, one must stop, and the bird will come within a few feet of the canoe; in fact, it is rather difficult to shoot it without destroying the specimen. It moves easily on the reeds, grasping the upright stems, and apparently is as much at home when walking in this manner as when running over the water-lilies and weeds. The birds were seen and heard in the dense growth of sword-grass and rushes on the swampy banks of Jessie Creek, as well as on the big swamp, where it was about one mile from solid land.

14. **Thallasseus bergi pelecanoides.** Northern Crested Tern.

Sterna pelecanoides King, Survey Intertrop. Coasts Austr. 1826, p. 422: Torres Strait.

Common.

15. **Sternula albifrons tormenti.** Western White-shafted Ternlet.

Sterna sinensis tormenti Mathews, Nov. Zool. vol. xviii. 1912, p. 210: Point Torment, North-west Australia.

Common.

16. **Bruchigavia novæhollandiæ gouldi.** Northern Silver Gull.

Gelastes gouldi Bonaparte, Naumannia, 1854, p. 216: Torres Strait.

Fairly common.

17. **Arenaria interpres oahuensis.** Eastern Turnstone.

Tringa oahuensis Bloxham, Voy. 'Blonde,' Sandwich Isl. 1826, p. 251: Sandwich Islands.

Fairly common.

18. **Hæmatopus ostralegus picatus.** Northern Pied Oyster-catcher.

Hæmatopus picatus King, Survey Intertrop. Coast Austr. 1826, p. 420: Point Torment, North-west Australia.

Fairly common, but very wary; one flock of twenty was seen.

19. **Erythrogonys cinctus mixtus.** Western Red-kneed Dotterel.

Erythrogonys cinctus mixtus Mathews, Nov. Zool. vol. xviii. 1912, p. 215 : Parry's Creek, North-west Australia.

Not common.

20. **Lobivanellus miles personata.** Lesser Masked Plover.

Lobivanellus personatus Gould, Birds Austr. vol. vi. 1842, pl. 10 : Coburg Peninsula, Northern Territory.

A pair came near Apsley Straits on the 1st of December and again on the 3rd of February. Another pair was seen in the north side of the Island on the 30th of December.

21. **Squatarola squatarola hypomelus.** Eastern Grey Plover.

Charadrius hypomelus Pallas, Reise Russ. Reichs, vol. iii. 1776, p. 699 : Siberia.

This species is rare on the Island, only a few being seen in November and December; after the 13th of the latter month no more were observed till April, when they were in twos and threes with other Waders, but never in flocks by themselves.

22. **Pluvialis dominicus fulvus.** Lesser Golden Plover.

Charadrius fulvus Gmelin, Syst. Nat. 1789, p. 687 : Tahiti.

A few were seen at different times; they were not nearly so wild as Mr. Rogers found them at Point Torment in north-west Australia. None were seen on the north side of the Island or anywhere else after the 3rd of February, 1912, until April, when small flocks appeared.

23. **Cirrepidesmus mongolus mongolus.** Mongolian Sand-Dotterel.

Charadrius mongolus Pallas, Reise Russ. Reichs, vol. iii. 1776, p. 700: Mongolia.

Small parties were seen on the beach in November, but none were observed after the 25th of that month till April and May, when many were noticed in full breeding-plumage.

24. **Pagoa geoffroyi.** Large Sand-Dotterel.

Charadrius geoffroyi Wagler, Syst. Av., Charadr. 1827, p. 61, sp. 19: Java.

This is one of the commonest Waders on the Island, and was usually seen in twos and threes, but never in numbers till February, when large flocks arrived; many of the birds were now in breeding-plumage, and were very wild. This species is never seen anywhere but on salt tidal creeks and on the sea-shore. They are equally common on mud-banks, sandy beaches, and shingle.

25. **Leucopolius ruficapillus tormenti.** Pale Red-capped Dotterel.

Charadrius ruficapillus tormenti Mathews, Nov. Zool. vol. xviii. 1912, p. 217: Point Torment, North-west Australia.

Not common.

26. **Numenius cyanopus.** Australian Curlew.

Numenius cyanopus Vieillot, Nouv. Dict. d'Hist. Nat. vol. viii. 1817, p. 306: New South Wales.

Fairly common but very wary.

27. **Phæopus phæopus variegatus.** Eastern Whimbrel.

Tantalus variegatus Scopoli, Del. Flor. Faun. Insub. fasc. ii. 1786, p. 92: Luzon.

During November only about half-a-dozen Whimbrel were seen, and these in the belts of mangroves. This is another species that is only found on the beach and tidal creeks, and is never seen away from the salt water. In February they appeared a little more numerous.

28. **Vetola lapponica baueri.** Eastern Barred-rumped Godwit.

Limosa baueri Naumann, Vögel Deutschl. vol. viii. 1836, p. 429: Victoria.

Common.

29. **Heteroscelus incanus brevipes.** Grey-rumped Sandpiper.

Totanus brevipes Vieillot, Nouv. Dict. d'Hist. Nat. vol. vi. 1816, p. 410: Port Essington, Northern Territory.

Several were seen towards the end of January and beginning of February, 1912.

30. **Actitis hypoleucus aurita.** Eastern Common Sandpiper.

Tringa aurita Latham, Index Ornith. Suppl. 1801, p. lxvi: New South Wales.

These birds are fairly numerous and tame for Waders. At spring tides, when the beaches are covered at high water, this species feeds in the forest-country, which comes right down to the beach. Usually it is solitary in its habits, but sometimes it is seen in parties of three or four and even in company with other Waders. Up to the 3rd of February, 1912, it did not increase or decrease in numbers. It is never found near fresh water, but always on the beach or on salt-water creeks.

31. **Terekia cinerea javanica.** Eastern Terek Sandpiper.

Totanus javanicus Horsfield, Trans. Linn. Soc. Lond. vol. xiii. 1821, p. 193: Java.

Common.

32. **Glottis nebularius glottoides.** Eastern Greenshank.

Totanus glottoides Vigors, Proc. Zool. Soc. 1831, p. 173: Himalayan Mts., India.

One of the most wary of Waders, second only to *Numenius cyanopus*. It is rare on the Island and none were seen after January 1912. Mr. Rogers often got this species on swamps and water-holes in Kimberley, north-west Australia.

33. **Calidris leucophæa tridactyla.** Eastern Sanderling.

Tringa tridactyla Pallas, Zoogr. Rosso-Asiat. vol. ii. 1827, p. 198 : Lake Baikal, Asia.

Very rare.

34. **Pisobia minuta ruficollis.** Little Stint.

Tringa ruficollis Pallas, Reise Russ. Reichs, vol. iii. 1776, p. 700 : Siberia.

A few were seen during November, but all had gone by December the 7th; they were very numerous during May 1912 and were mixed with other species.

35. **Erolia ferruginea chinensis.** Eastern Curlew-Sandpiper.

Tringa (*Pelidna*) *chinensis* Gray, Zool. Misc. 1831, p. 2 : China.

Common.

36. **Canutus canutus rogersi.** Eastern Knot.

Canutus canutus rogersi Mathews, Birds Austr. vol. iii. 1913, p. 270 : Japan.

Common.

37. **Anteliotringa tenuirostris.** Great Knot.

Totanus tenuirostris Horsfield, Trans. Linn. Soc. Lond. vol. xiii. 1821, p. 192 : Java.

Common.

38. **Limicola falcinellus sibirica.** Eastern Broad-billed Sandpiper.

Limicola sibirica Dresser, Proc. Zool. Soc. 1876, p. 674 : Siberia.

Rare.

39. **Subspilura megala.** Larger Pin-tailed Snipe.

Gallinago megala Swinhoe, Ibis, 1861, p. 343 : Pekin, China.

One was obtained on January the 13th and another on the 15th.

40. **Irediparra gallinacea rothschildi.** Western Comb-crested Jacana.

Irediparra gallinacea rothschildi Mathews, Nov. Zool.

vol. xviii. 1912, p. 224: Parry's Creek, North-west Australia.

This bird was common on Jessie Creek, on the north side of the Island. There is a wide border of water-lilies of the purple and the white varieties, and in this place the birds were quite at home.

The eggs were placed on the floating roots of a water-lily, with some rotting vegetation. There was no trace of a nest. The patch of roots measured 10 inches by 10. The eggs were only half-an-inch above the water-level and their lower sides were quite wet.

Eggs. Clutch four; ground-colour brown, marked all over with long, black, irregular lines; axis 27–28 mm., diameter 21–22.

The young in the egg had the frontal lappel barely discernible and the feet had no abnormal length of claw, although they had well-developed feathers.

41. **Stiltia isabella.** Australian Pratincole.

Glareola isabella Vieillot, Analyse Nouv. Ornith. 1816, p. 69: Australia.

Rare.

42. **Burhinus magnirostris rufescens.** Little Stone-Plover.

Burhinus magnirostris rufescens Mathews, Nov. Zool. vol. xviii. 1912, p. 225: Parry's Creek, North-west Australia.

This species was rare in November, but got more plentiful in December. None were seen on the north side of the Island. When disturbed they usually come out from under a bush and run for a considerable distance before taking to flight.

43. **Orthorhamphus magnirostris neglectus.** Long-billed Stone-Plover.

Esacus magnirostris neglectus Mathews, Nov. Zool. vol. xviii. 1912, p. 226: Lewes Island, Western Australia.

This is also a rare bird on the Island, and is never seen away from the sea-shore.

44. **Austrotis australis derbyi.** Northern Bustard.

Choriotis australis derbyi Mathews, Nov. Zool. vol. xviii. 1912, p. 226 : Derby, North-west Australia.

Very rare on the Island, although about ten miles east of Gordon Point, Apsley Straits, many were seen, but they are very wild. They were on a large, sandy, and stony plain which was covered with low bush and had just been burnt—in fact, three of the birds were shot at the fire when they were keeping just ahead of the flames catching grasshoppers as they rose.

45. **Mathewsia rubicunda argentea.** Silver Crane.

Mathewsia rubicunda argentea Mathews, Nov. Zool. vol. xviii. 1912, p. 227 : Fitzroy River, North-west Australia.

Rare.

46. **Threskiornis molucca strictipennis.** White Ibis.

Ibis strictipennis Gould, Synops. Birds Austr. pt. iv. App. 1838, p. 7 : New South Wales.

Only two or three birds were seen in three months, and these were very wild ; none were found in the great swamp. They feed among the mangroves on crabs and shell-fish.

47. **Spatherodia regia.** Black-billed Spoonbill.

Platalea regia Gould, Synops. Birds Austr. pt. iv. App. 1838, p. 7 : New South Wales.

Seen in small flocks and always flying high.

48. **Xenorhynchus asiaticus australis.** Black-necked Stork.

Mycteria australis Shaw, Trans. Linn. Soc. Lond. vol. v. 1800, p. 33 : New South Wales.

Rare.

49. **Typhon sumatrana mathewsæ.** Great-billed Heron.

Ardea sumatrana mathewsæ Mathews, Nov. Zool. vol. xviii. 1912, p. 230 : Cooktown, North Queensland.

Two seen in three months. They fed in an open patch in the mangroves, and when disturbed flew into a tree near by. None were seen after the 7th of December.

50. **Egretta garzetta immaculata.** Lesser Egret.

Herodias immaculata Gould, Birds Austr. vol. vi. 1846, pl. 58: Port Essington.

Fairly common, but difficult to obtain.

51. **Herodias alba syrmatophora.** White Egret.

Herodias syrmatophorus Gould, Birds Austr. vol. vi. 1846, pl. 56: New South Wales.

These birds are not numerous. They are very wary, and, although scattered over the swamp, could only be seen when they rose from the reeds, which in most places were not very thick, but were tall enough to completely hide the birds.

52. **Tonophoyx aruensis flavirostris.** Pied Egret.

Notophoyx flavirostris Sharpe, Cat. Birds Brit. Mus. vol. xxvi. 1898, p. 654: Port Essington.

Rare.

53. **Demigretta greyi.** White Reef-Heron.

Herodias greyi Gould, Birds Austr. vol. vi. 1848, pl. 61: Raine Island, Queensland.

Rare.

54. **Nycticorax caledonicus australasiæ.** Night-Heron.

Ardea australasiæ Vieillot, Tabl. Encyc. Méth., Ornith. vol. iii. 1823, p. 1130: New South Wales.

These birds are rare on the Island. They were seen in the mangroves and fresh-water creeks, and a few in the great swamp.

55. **Butorides striata stagnatilis.** Little Mangrove-Bittern.

Ardetta stagnatilis Gould, Proc. Zool. Soc. for 1847, 1848, p. 221: Port Essington.

Often seen in the mangroves or along the tidal creeks.

56. **Dupetor flavicollis olivei.** Northern Yellow-necked Bittern.

Ardeiralla flavicollis olivei Mathews, Nov. Zool. vol. xviii. 1912, p. 234: Johnston River, Queensland.

Nest. This was built in a three-pronged fork of a Paper-bark tree that had fallen into the creek and was still growing. It consisted of a platform of Paper-bark twigs with the centre covered with finer twigs. The eggs were placed in a slight depression. It was about two feet above the level of the water and was partly hidden by leafy branches. The platform measured 14 inches by 10, and was 6 inches thick in the centre.

Eggs. Clutch two to three, white; axis 42 mm., diameter 35.

Breeding-season. December and January.

This species was fairly numerous, but very wild and hard to obtain on account of the vegetation in the swamp.

57. **Anseranas semipalmata.** Pied Goose.

Anas semipalmata Latham, Trans. Linn. Soc. Lond. vol. iv. 1798, p. 103: Hawkesbury River, New South Wales.

First seen passing over on the 20th of November; after that many flocks went by every evening. They were plentiful in the great swamp. Owing to the crocodiles (*Crocodilus porosus*) not many eggs are found on the Island, though they breed abundantly on the mainland.

58. **Cheniscus pulchellus.** Green Goose-Teal.

Nettopus pulchellus Gould, Proc. Zool. Soc. 1841, p. 89: Port Essington.

This species was very numerous on the edges of the great swamp and on Jessie Creek in December. They perch in trees regularly and may even breed in holes in them. Those shot on the 10th of January, 1912, had eggs in the ovaries as large as haricot-beans. Their note is a fairly loud whistle.

59. **Dendrocygna javanica gouldi.** Whistling Duck.

Dendrocygna gouldi Gould, Handb. Birds Austr. vol. ii. 1865, p. 374: Port Essington.

A few were seen from October to December. On the 10th of January, 1912, a large flock passed over.

60. **Leptotarsis eytoni.** Plumed Whistling Duck.

Leptotarsis eytoni Eyton, Monogr. Anat. 1838, p. 111: North-west Australia.

Rare.

61. **Nyroca australis.** White-eyed Duck.

Nyroca australis Eyton, Monogr. Anat. 1838, p. 160: New South Wales.

Rare.

62. **Microcarbo melanoleucus.** Little Cormorant.

Hydrocorax melanoleucus Vieillot, Nouv. Dict. d'Hist. Nat. vol. viii. 1817, p. 88: New South Wales.

This is the only Cormorant on the Island and is very rare. It was only found on Jessie Creek.

63. **Anhinga novæhollandiæ.** Darter.

Plotus novæhollandiæ Gould, Proc. Zool. Soc. 1847, p. 34: New South Wales.

Very rare.

64. **Catoptropelicanus conspicillatus westralis.** Western Pelican.

Pelecanus conspicillatus westralis Mathews, Nov. Zool. vol. xviii. 1912, p. 244: Perth, Western Australia.

Very rare.

65. **Circus assimilis rogersi.** Lesser Spotted Harrier.

Circus assimilis rogersi Mathews, Nov. Zool. vol. xviii. 1912, p. 244: Fitzroy River, North-west Australia.

Very rare.

66. **Leucospiza novæhollandiæ novæhollandiæ.** White Goshawk.

Falco novæhollandiæ Gmelin, Syst. Nat. 1788, p. 264: Tasmania.

Rare.

67. **Urospiza fasciata didima.** Northern Goshawk.

Astur fasciatus didimus Mathews, Austral Av. Rec. vol. i. 1912, p. 33: Melville Island.

Very rare.

68. **Uroaëtus** sp. incert.

One seen.

69. **Cuncuma leucogaster.** White-bellied Sea-Eagle.

Falco leucogaster Gmelin, Syst. Nat. 1788, p. 257 : New South Wales.

Rare.

70. **Haliastur indus leucosternus.** White-headed Sea-Eagle.

Haliaeetus leucosternus Gould, Synops. Birds Austr. pt. iii. 1838, pl. 40 : New South Wales.

Plentiful on the north side of the island; two nests were found in January.

71. **Haliastur sphenurus.** Whistling Eagle.

Milvus sphenurus Vieillot, Nouv. Dict. d'Hist. Nat. vol. xx. 1818, p. 564 : New South Wales.

A few seen and two nests, both the latter built in tall Paper-bark trees, in the great swamp.

72. **Milvus korschun affinis.** Allied Kite.

Milvus affinis Gould, Synops. Birds Austr. pt. iii. pl. 47, 1838 : New South Wales.

Not common.

73. **Falco longipennis apsleyi.** Northern Little Falcon.

Falco lunulatus apsleyi Mathews, Austral Av. Rec. vol. i. 1912, p. 33 : Melville Island.

Very rare.

74. **Ieracidea berigora melvillensis.** Northern Brown Hawk.

Ieracidea berigora melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 34 : Melville Island.

Only found near Apsley Straits, none seen on the north side of the Island. Mr. Rogers noticed that they differed from those seen in north-west Australia.

75. **Cerchneis cenchroides milligani.** Dusky Wankeen Kestrel.

Cerchneis cenchroides milligani Mathews, Nov. Zool.

vol. xviii. 1912, p. 253: Parry's Creek, North-west Australia.

Not common.

76. **Pandion haliaëtus cristatus.** White-headed Osprey.

Buteo cristatus Vieillot, Nouv. Dict. d'Hist. Nat. vol. iv. 1816, p. 481: Tasmania.

This species is fairly numerous, but only on Apsley Straits.

77. **Spiloglaux boobook melvillensis.** Red Boobook Owl.

Ninox boobook melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 34: Melville Island.

This bird seems rare in the Island; it is sometimes seen in daytime.

78. **Tyto novæhollandiæ melvillensis.** Northern Chestnut-faced Owl.

Tyto novæhollandiæ melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 35: Melville Island.

Seen on both sides of the Island. Their strange call is often heard at night.

79. **Trichoglossus rubritorquis.** Red-collared Lorikeet.

Trichoglossus rubritorquis Vigors and Horsfield, Trans. Linn. Soc. Lond. vol. xv. 1826, p. 291: North-west Australia.

This species is very numerous, and is found in all the trees that are in full bloom. It eats the flowers of the trees as well as the honey.

80. **Psitteuteles versicolor mellori.** Northern Varied Lorikeet.

Trichoglossus versicolor mellori Mathews, Nov. Zool. vol. xviii. 1912, p. 259: South Alligator, Northern Territory.

This bird was very common while the trees were in bloom in November, but went away when the trees finished flowering, returning again when the Paper-bark trees bloomed in February, but not in such numbers as previously. None were found on the north side.

81. **Calyptorhynchus banksii macrorhynchus.** Great-billed Cockatoo.

Calyptorhynchus macrorhynchus Gould, Proc. Zool. Soc. for 1842, 1843, p. 138 : Port Essington.

These Cockatoos are fairly numerous from September onwards. They feed on the seeds of a species of Eucalyptus which has large crops of big seed-vessels; these latter are as big as the ball of a large thumb. They left early in December. A few small flocks passed over in January and February, and by June they were again plentiful.

82. **Cacatoes galerita melvillensis.** Northern White Cockatoo.

Cacatoes galerita melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 36 : Melville Island.

These Cockatoos are sparingly distributed over the Island. They feed on the large seeds of the Pandanus.

83. **Ducorpsius gymnopis apsleyi.** Melville-Island Bare-eyed Cockatoo.

Cacatoes gymnopis apsleyi Mathews, Austral Av. Rec. vol. i. 1912, p. 36 : Melville Island.

Many small flocks of two or three were seen devouring the seeds of the Eucalyptus favoured by *Calyptorhynchus*; they are fairly common and sometimes seen feeding on the ground.

84. **Aprosmictus erythropterus coccineopterus.** Crimson-winged Parrot.

Ptistes coccineopterus Gould, Handb. Birds Austr. vol. ii. 1865, p. 39 : Port Essington.

These birds are very numerous at times, in flocks up to twenty in number, but are more often in small parties of about half a dozen. In the large flocks there are usually several males in full plumage, and in the small lots generally only one male. They feed on the small figs, and are not so plentiful on the north side of the Island.

85. **Platycercus venustus venustus.** Smutty Parrot.

Psittacus venustus Kuhl, Nov. Act. Phys. Acad. Leop.-Carol. vol. x. 1820, p. 52: Arnhem Land.

These Parrots are very numerous, and can be seen in small flocks or in pairs, and are scattered through the forest-country. They are very tame. They were rare on the north side. In February they were seen feeding in the mangroves, but they usually obtain their nourishment from grass seeds on the ground. They are non-migratory.

86. **Podargus strigoides melvillensis.** Melville - Island Frogmouth.

Podargus strigoides melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 37: Melville Island.

Fairly numerous, except on the north side of the Island. In November they had half-grown young. Their moaning call was heard nearly every night. If shot in the early morning, their stomachs were found stuffed full of food, but in the evening contained only a few wing-cases of beetles.

87. **Ægotheles cristata leucogaster.** White-bellied Owlet Nightjar.

Ægotheles leucogaster Gould, Proc. Zool. Soc. 1844, p. 106: Port Essington.

This species is occasionally heard during the daytime on dull rainy days. The day call is loud and harsh. At night the call is squeaky. It is more numerous on the north side. When lodged in the big trees during the day it is hard to flush. In the north-west Mr. Rogers usually found them in small hollow trees, and could easily dislodge them by tapping the outside of the tree.

88. **Eurystomus orientalis bravi.** Western Roller.

Eurystomus orientalis bravi Mathews, Nov. Zool. vol. xviii. 1912, p. 285: Parry's Creek, North-west Australia.

The first one was seen on the 16th of October and another on the 10th of November. These were the only two observed.

89. **Alcyone azurea pulchra.** Purple Kingfisher.

Alcyone pulchra Gould, Proc. Zool. Soc. 1846, p. 19: Port Essington.

This bird seems common, and the first one was obtained on the 26th of October on a freshwater creek. Others have been seen in the mangrove-creeks. They nest on the foreshore on Apsley Straits, where the sea is washing away the land; here they find a convenient eastern bluff, in which the nesting-holes are visible. On the great swamp a few were seen in the Paper-bark trees. They are resident throughout the year.

90. **Micralcyone pusilla ramsayi.** Northern Little Kingfisher.

Alcyone ramsayi North, Ibis, 1912, p. 119: Port Essington.

Rare.

91. **Dacelo leachii nana.** Dwarf Fawn-breasted Kingfisher.

Dacelo leachii nana Mathews, Austral Av. Rec. vol. i. 1912, p. 37: Melville Island.

Common.

92. **Cyanalcyon macleayi distinguendus.** Western Forest-Kingfisher.

Halcyon macleayi distinguendus Mathews, Nov. Zool. vol. xviii. 1912, p. 288: South Alligator River, Northern Territory.

The nest was placed at the end of a tunnel in a small termites' nest in the fork of a small wattle, about 15 feet from the ground. The birds had scooped out the whole interior of the structure. The eggs were placed on fine fragments of the termites' nest. The entrance-hole was about 2½ inches across and the nesting-chamber 8 inches by 8 by 5 high.

Eggs. Clutch 5, white; 24 mm. by 21. Date 9 Nov., 1911.

This Kingfisher was very common, and was usually found in the forest, but was sometimes seen on the edge of the mangroves. During October many birds were observed making holes in termites' nests, in some cases 50 feet from the ground. It was also common in the large belt of Pandanus which fringes the outer edge of the great swamp.

In this latter locality they live in part on fish, as a small mullet about an inch and a half long was found in the stomach of one individval, as well as bones and scales of other fish and fragments of insects.

This species does not fish like *Alcyone,* but flies down to the surface of the water, in a slanting direction, and merely seems to dip the beak and perhaps its head into the water; the whole action resembles the catching of a small lizard or other prey on land, where the bird often flies down, seizes its prey, and returns to its perch, without alighting on the ground. It is a resident.

93. **Sauropatis sancta ramsayi.** Broad - bellied Sacred Kingfisher.

Halcyon sanctus ramsayi Mathews, Nov. Zool. vol. xviii. 1912, p. 289: Parry's Creek, Northern Territory.

This Kingfisher is common, and frequents mangrove-swamps; it is rarely seen in the forest, and its food consists of small crabs. It is a migrant.

94. **Sauropatis sordida melvillensis.** Melville - Island Mangrove-Kingfisher.

Halcyon sordidus melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 38 : Melville Island.

This bird is fairly numerous, and is found in scattered mangroves growing along the foreshore of the tidal creeks. It is rather noisy, and can be heard for a considerable distance. It lives in small scattered parties of five or six, but may be seen singly.

Nest. In a hollow limb of a large Eucalyptus about 60 feet from the ground.

95. **Cosmærops ornatus shortridgei.** Western Bee-eater.

Merops ornatus shortridgei Mathews, Nov. Zool. vol. xviii. 1912, p. 290: Strelly River, West Australia.

From November to December this bird was rather scarce, but during January it increased in numbers and by February was very common.

96. **Caprimulgus macrurus keatsi.** Allied Large-tailed Nightjar.

Caprimulgus macrurus keatsi Mathews, Nov. Zool. vol. xviii. 1912, p. 291: Port Keats, Northern Territory.

The call of this bird is like the noise made by tapping the end of a log with a hammer. It can be heard for a considerable distance. On the 10th of October a bird was shot while it was making this peculiar call. On the 8th of November two young ones were found by flushing the old bird off them. They were placed just above the high-water mark of that morning. When the young ones were discovered, the old bird tried to draw attention to herself by flapping and struggling. These birds are rarely seen during daylight. They inhabit the mangroves, and are usually heard either in or on the outskirts of them. Occasionally they are met with along the foreshore. They are non-migratory.

97. **Micropus pacificus.** White-rumped Swift.

Hirundo pacifica Latham, Index Ornith. Suppl. 1801, p. lviii: New South Wales.

On the 15th of October a few birds passed over, flying very high; these were the first seen; others were noticed on the 7th of November. No others were observed.

98. **Cuculus optatus.** Oriental Cuckoo.

Cuculus optatus Gould, Proc. Zool. Soc. 1845, p. 18: Port Essington.

During December and January some were seen every day, but were very wild.

99. **Heteroscenes pallidus occidentalis.** Western Pallid Cuckoo.

Heteroscenes occidentalis Cabanis and Heine, Mus. Hein. vol. iv. 1862, p. 27, note: West Australia.

This bird was first seen on the 13th of January, 1912; an immature individual was noticed next day.

100. **Cacomantis pyrrophanus dumetorum.** Western Square-tailed Cuckoo.

Cuculus dumetorum Gould, Proc. Zool. Soc. 1845, p. 19: Port Essington.

On the north side of the Island this Cuckoo was very common, but near Apsley Straits it was rare. Apparently it winters here.

Egg. Ground-colour pale stone, with a ring of lavender spots, mixed with a few of reddish, round the the larger end. Axis 18 mm., diameter 13.

101. **Neochalcites basalis wyndhami.** Western Narrow-billed Bronze Cuckoo.

Chalcococcyx basalis wyndhami Mathews, Austral Av. Rec. vol. i. 1912, p. 14: Point Torment, North-west Australia.

Rare.

102. **Lamprococcyx minutellus minutellus.** Little Bronze Cuckoo.

Chrysococcyx minutellus Gould, Proc. Zool. Soc. 1859, p. 128: Port Essington.

Egg. Ground-colour olive-green, which, on being scraped off, reveals a pale green colour. Axis 20·5 mm., diameter 13.

Found in the nest of *Ethelornis magnirostris melvillensis.* As this is the common Bronze Cuckoo on the Island (only one other being seen, "*wyndhami*"), I am describing it as such for what it is worth.

On the 25th of October this species was observed for the first time. By December it had become more plentiful. None were seen on the north side. Apparently this bird winters here. Its note differs from that of other Bronze Cuckoos.

103. **Eudynamys orientalis subcyanocephalus.** Western Koel.

Eudynamys orientalis subcyanocephalus Mathews, Austral Av. Rec. vol. i. 1912, p. 21: Parry's Creek, North-west Australia.

Rare.

104. **Scythrops novæhollandiæ neglectus.** Little Channel-Bill.

Scythrops novæhollandiæ neglectus Mathews, Nov. Zool. vol. xviii. 1912, p. 297: Parry's Creek, North-west Australia.

Rare.

105. **Polophilus phasianinus macrourus.** Northern Coucal.

Centropus macrourus Gould, Birds Austr. vol. iv. 1847, text to pl. 92: Port Essington.

A few of these birds were seen on the 15th of October, and a month later they were quite numerous. Mr. Cooper, a resident on the Island, says they are always plentiful during the wet season on Apsley Straits, but leave for the better-watered parts of the Island when the water dries up there. When disturbed they fly up into the lower branches of a tree and then hop and climb right up to the top—if possible, balancing themselves on the topmost leaves. They seem to be actually lying on the leaves. The alarm-call is a harsh scolding note.

106. **Pulchripitta iris.** Rainbow Pitta.

Pitta iris Gould, Proc. Zool. Soc. 1842, p. 17: Port Essington.

Rare.

107. **Hylochelidon nigricans rogersi.** Northern Tree-Martin.

Petrochelidon nigricans rogersi Mathews, Austral Av. Rec. vol. i. 1912, p. 38: Port Darwin.

These birds are fairly numerous along the foreshore; two were shot out of a flock of about 200 which were perched on a dead tree. They were most numerous during November;

by December the 10th they had become fewer, and by the 16th only a few stragglers were left. During the day only stragglers are seen, but towards sunset the birds begin to arrive from the mainland, when the air is thick with them. They then gradually gather together into a great whirling cloud, resembling a column which reaches to within fifty yards of the ground, the top being fully three hundred yards higher. They keep up their circular flight till dusk, and then drop into the mangroves, where the chorus becomes an incredibly shrill sound, not unlike that of high-pressure steam escaping. There are many thousands of birds in these columns. This is repeated every evening.

108. **Kempia flavigaster melvillensis.** Melville-Island Lemon-breasted Flycatcher.

Micrœca flavigaster melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 39 : Melville Island.

This species is sparingly distributed, but seems more numerous in the mangroves than elsewhere.

On the 14th of January, 1912, a nest was found; both birds were seen at it, but there were no eggs. It was built in a fork of a thin branch of a Paper-bark tree, which was leaning out of the water. In size and type this nest resembled that of *Micrœca pallida*.

109. **Melanodryas cucullata subpicata.** Northern Pied Robin.

Petroica cucullata subpicata Mathews, Nov. Zool. vol. xviii. 1912, p. 306 : Alexandra, Northern Territory.

Common.

110. **Smicrornis brevirostris melvillensis.** Melville-Island Tree-Tit.

Smicrornis brevirostris melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 39 : Melville Island.

These birds are seen occasionally in tall timber and in parties of up to a dozen; when feeding they move slowly from tree to tree, calling incessantly. They are not nearly so plentiful as the allied subspecies found in Kimberley, north-west Australia.

111. **Wilsonavis chloronotus apsleyi.** Melville - Island Green-backed Fly-eater.

Gerygone chloronota apsleyi Mathews, Austral Av. Rec. vol. i. 1912, p. 40: Melville Island.

This species is rare on the Island. Usually a few are seen in the small patches of jungle. On the 7th of January, 1912, a pair was noticed building a nest in a "cedar" tree, which was growing on a ridge near the great swamp. The nest was about 30 feet up. A week later the nest was half finished and deserted. In size and shape it was very like that of *Ethelornis magnirostris melvillensis.*

The song is not unlike the song of *W. lævigaster* from Derby in north-west Australia, but is shriller and not so musical.

112. **Ethelornis magnirostris melvillensis.** Melville-Island Large-billed Fly-eater.

Gerygone magnirostris melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 39 : Melville Island.

These birds are found in the mangroves. Immature examples of this species have no yellow on the under surface like immature specimens of *W. lævigaster.*

The nest is dome-shaped, suspended from a small twig of a leafy tree. The opening is about halfway down. It is constructed of dried grass, the outside with spiders' cocoons more or less all over it. There is no lining. Length, outside 9 inches by 3 ; opening 1 inch across.

Eggs. Clutch two ; white, with the larger end reddish brown and spots of the same colour distributed over the rest of the surface. Axis 16 mm., diameter 11. Breeding in November.

113. **Quoyornis leucura greda.** Melville-Island White-tailed Shrike-Robin.

Pachycephala leucura greda Mathews, Austral Av. Rec. vol. i. 1912, p. 40 : Melville Island.

Not rare.

114. **Pachycephala pectoralis consobrina.** Buchanan-Island Black-tailed Thickhead.

Pachycephala gutturalis consobrina Mathews, Austral Av. Rec. vol. i. 1912, p. 76: Buchanan Island.

Common, always found in dense mangrove-brakes.

115. **Lewinornis rufiventris falcata.** Northern Rufous-breasted Thickhead.

Pachycephala falcata Gould, Proc. Zool. Soc. for 1842, 1843, p. 134: Port Essington.

This is the common Thickhead of the Island, and is fairly numerous in the forests, often in the tall trees; also in the Paper-bark forest near the great swamp. It is not migratory.

116. **Alisterornis lanioides buchanani.** Allied White-bellied Thickhead.

Pachycephala lanioides buchanani Mathews, Austral Av. Rec. vol. i. 1912, p. 77: Buchanan Island.

Common.

117. **Muscitrea grisola riordani.** Melville-Island Brown Thickhead.

Pachycephala grisola riordani Mathews, Austral Av. Rec. vol. i. 1912, p. 41: Melville Island.

In November this bird was silent, but seen in dense mangroves; some were found in the Paper-bark forest. In January its note was often heard. It is a resident.

118. **Rhipidura flabellifera buchanani.** Buchanan-Island Pheasant-Fantail.

Rhipidura flabellifera buchanani Mathews, Austral Av. Rec. vol. i. 1912, p. 90: Buchanan Island.

Common.

119. **Howeavis rufifrons dryas.** Wood-Fantail.

Rhipidura dryas Gould, Proc. Zool. Soc. for 1842, 1843, p. 132: Port Essington.

Very rare on the Island.

120. **Setosura setosa isura.** Northern Fantail.

Rhipidura isura Gould, Proc. Zool. Soc. for 1840, 1841, p. 174: Port Essington.

A nest was built in a small wattle and placed on the top of a horizontal fork, about six feet from the ground. It was wine-glass shaped, with a tail four and a half inches long, the materials used being grass and narrow strips of Paper-bark. The outside was covered over with cobwebs. The lining consisted of very fine pieces of Paper-bark. Measurements: $2\frac{1}{4}$ by $2\frac{1}{8}$ inches deep; inside $1\frac{1}{2}$ by $1\frac{1}{2}$ by $\frac{3}{4}$ inches deep.

Eggs. Clutch two; ground-colour cream, with a zone of brown and lavender spots round the larger end. Axis 19 mm., diameter 14. They were taken in November.

These birds are numerous, both in the forest and in the mangroves, but they are never found in the dense parts of the latter.

121. **Leucocirca tricolor picata.** Western Black-and-White Fantail.

Rhipidura picata Gould, Birds Austr. vol. i. 1848, Introd. p. xxxix: Port Essington.

Not rare.

122. **Myiagra rubicula concinna.** Blue Flycatcher.

Myiagra concinna Gould, Birds Austr. vol. ii. 1848, pl. 90: Port Essington.

A nest was found about 35 feet from the ground on the 26th of October. Another one about 50 feet from the ground on the 28th. They are cup-shaped, placed on the side of a stick (which sloped at about 45 degrees) and constructed of strips of Paper-bark, with a few rootlets inside; on the outside numberless small pieces of bark are plastered all over the nest and held in place with cobwebs. Inside measurements $1\frac{3}{4}$ inches by 1 deep.

Eggs. Clutch two; ground whitish, with a ring at the larger end of large lavender and brown spots. Axis 19 mm., diameter 14–15.

123. **Myiagra latirostris latirostris.** Broad-bellied Flycatcher.

Myiagra latirostris Gould, Proc. Zool. Soc. for 1840, 1841, p. 172: Port Essington.

This species inhabits the dense mangroves, and can often be heard, but not seen.

124. **Piezorhynchus alecto nitidus.** Shining Flycatcher.

Piezorhynchus nitidus Gould, Proc. Zool. Soc. for 1840, 1841, p. 171 : Port Essington.

These birds also live in the mangroves, but are common on Jessie Creek and round the edges of the great swamp, miles away from the mangroves. They creep about among the roots of the mangroves, searching for their food in the mud. On the 26th of January, 1912, a nest was found, which contained three naked black-skinned young. The nest was built in a mangrove growing in a scattered clump near the beach.

125. **Coracina novæhollandiæ subpallida.** North-western Black-faced Cuckoo-Shrike.

Coracina novæhollandiæ subpallida Mathews, Nov. Zool. vol. xviii. 1912, p. 326 : North-west Australia.

These birds are not numerous on the Island, but small parties have been seen flying high over the trees; they are migratory, leaving in November and returning in May.

126. **Coracina hypoleuca hypoleuca.** White-bellied Cuckoo-Shrike.

Coracina hypoleuca Gould, Proc. Zool. Soc. 1848, p. 38 : Port Essington.

This is one of the commonest species on the Island; on the 10th of December three birds in young plumage were procured, showing that they had lately bred. It appears resident, but is not so common on the north side of the Island.

127. **Metagraucalus tenuirostris melvillensis.** Melville-Island Caterpillar-catcher.

Coracina tenuirostris melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 43: Melville Island.

Occasionally a pair is seen, but it is decidedly a rare bird, though more numerous on the north side. This species was not noticed by Mr. Rogers anywhere in north-west Australia.

128. **Lalage tricolor indistincta.** Pale-rumped Caterpillar-eater.

Lalage tricolor indistincta Mathews, Nov. Zool. vol. xviii. 1912, p. 328: Wyndham, North-west Australia.

This species is very rare on the Island, only one bird being seen on the 1st of November.

129. **Karua leucomela rufiventris.** Banded Caterpillar-eater.

Campephaga rufiventris Gray, Genera Birds, vol. i. 1846, p. 283: Raffles Bay, Northern Territory.

This is rather a silent bird, its note being more like that of *Metagraucalus tenuirostris melvillensis* than that of *Lalage tricolor indistincta*. Its favourite haunts are the dense growths along creeks and the clumps of heavily foliaged trees and shrubs. In comparison with *L. tricolor indistincta* it is a "skulker," moving quietly about amongst the branches. It is a confirmed fruit-eater, the stomachs, as a rule, containing little else than the smaller native fruits. It is sometimes seen in the open forest-country and is a resident.

130. **Pomatostomus temporalis rubeculus.** Red-breasted Babbler.

Pomatorhinus rubeculus Gould, Proc. Zool. Soc. for 1839, 1840, p. 144: Port Essington.

These birds are numerous, and are found in the forest-country. They breed on the Island, as two young ones were shot on the 7th of November; they are non-migratory.

131. **Conopoderas australis melvillensis.** Northern Reed-Warbler.

Acrocephalus australis melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 77 : Melville Island.

Not common.

132. **Cisticola exilis lineocapilla.** Northern Grass-Warbler.

Cysticola lineocapilla Gould, Proc. Zool. Soc. 1847, p. 1 : Port Essington.

Common.

133. **Dulciornis alisteri melvillensis.** Melville - Island Grass-Bird.

Megalurus alisteri melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 92 : Melville Island.

Not common.

134. **Ryania melanocephala cruentata.** Red-backed Wren.

Malurus cruentatus Gould, Proc. Zool. Soc. for 1839, 1840, p. 143 : Port Essington.

This species is numerous, and appears to mate in December ; by February they were in pairs and the males in fine plumage. It is usually seen in long grass.

135. **Artamus leucorhynchus harterti.** Western White-rumped Wood-Swallow.

Artamus leucorhynchus harterti Mathews, Nov. Zool. vol. xviii. 1912, p. 367 : Parry's Creek, North-west Australia.

This species is very plentiful, and is the only member of the genus *Artamus* found on the Island. A nest was found on the 4th of November; by the 16th it contained an egg. It was built in a small gum-tree overhanging the sea-beach, and was placed in a bunch of shoots which was growing from where a branch had broken off.

This Wood-Swallow appears to frequent the foreshore, as none were met with inland, excepting a few noticed on the Paper-bark trees in the great swamp.

136. **Colluricincla brunnea brunnea.** Brown Shrike-Thrush.

Colluricincla brunnea Gould, Proc. Zool. Soc. for 1840, 1841, p. 164: Port Essington.

These are plentiful in the forest-country, and usually feed on the ground. They are residents.

137. **Conigravea parvula omissa.** Melville-Island Shrike-Thrush.

Colluricincla parvula omissa Mathews, Austral Av. Rec. vol. ii. 1913, p. 68: Melville Island.

This species is numerous in the dense growths along the creeks or in the mangroves. The note is a loud whistle, rather like that of *C. brunnea*. It is also common in the swamps and small jungles on the north side.

138. **Grallina cyanoleuca neglecta.** Little Magpie-Lark.

Grallina cyanoleuca neglecta Mathews, Nov. Zool. vol. xviii. 1912, p. 372: Parry's Creek, North-west Australia.

Not rare.

139. **Melloria quoyi spaldingi.** Allied Butcher-Bird.

Cracticus spaldingi Masters, Proc. Linn. Soc. N.S.W. vol. ii. 1877, p. 271: Port Darwin, Northern Territory.

Usually these birds are found where the mangroves are tall and dense, but occasionally they are seen on the outskirts of the belts of this growth. They keep to the same locality, and can be heard, if not seen, day after day near the same spot. They are noisy birds with strange loud notes, and are rather difficult to see. The natives say they never leave the mangroves. They breed on the Island in January.

140. **Cracticus nigrogularis picatus.** Pied Butcher-Bird.

Cracticus picatus Gould, Proc. Zool. Soc. 1848, p. 40: Port Essington.

This species frequents the forest-country in small parties, and is usually to be found on some ridges about Apsley Straits. It is not very numerous and is rather wild.

141. **Neositta pileata melvillensis.** Melville Island Tree-Runner.

Neositta pileata melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 47 : Melville Island.

This species is rare on the Island, only a few parties being seen, and these usually in the tops of the tall trees. They go about in flocks of five or six. Mr. Rogers found the allied subspecies in north-west Australia.

142. **Zosterops lutea lutea.** Yellow White-eye.

Zosterops lutea Gould, Birds Austr. vol. iv. 1843, pl. 83 : Van Diemen Gulf, Northern Territory.

A few birds of this species were met with near Apsley Straits, but none on the north side of the Island. On the 6th of November a nest and two eggs were found, but the latter could not be blown, as the young were on the point of hatching. The nest was of the usual type and placed in the mangroves, where the birds themselves are usually met with. They are residents.

143. **Austrodicæum hirundinaceum tormenti.** Western Mistletoe-Bird.

Dicæum hirundinaceum tormenti Mathews, Nov. Zool. vol. xviii. 1912, p. 387 : Point Torment, North-west Australia.

Very few of these birds have been seen on the Island; they are always on trees and bushes which bear mistletoe.

144. **Pardalotus melanocephalus melvillensis.** Orange-rumped Pardalote.

Pardalotus melanocephalus melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 48 : Melville Island.

Not numerous, and usually found in forest-country, but sometimes seen in low bushes on the foreshore. On the north side they were found in the Paper-bark forest. They are resident and non-migratory.

145. **Melethreptus lunata albogularis.** White-throated Honey-eater.

Melethreptus albigularis Gould, Proc. Zool. Soc. for 1847, 1848, p. 220 : Port Essington.

This species is one of the commonest all over the Island, and is found on the outside edges of the mangroves as well as in the forests. It frequents trees and shrubs when they are in flower.

146. **Myzomela erythrocephala melvillensis.** Melville-Island Red-headed Honey-eater.

Myzomela erythrocephala melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 48: Melville Island.

Fairly numerous; it is nearly always found in or near the mangroves, and is never far away from them.

147. **Melomyza obscura apsleyi.** Melville-Island Dusky Honey-eater.

Myzomela obscura apsleyi Mathews, Austral Av. Rec. vol. i. 1912, p. 48: Melville Island.

These birds are found in the mangroves and jungle-growth along the creek, and a few are seen in the forests. Very few show any red on the head. They are non-migratory.

148. **Ramsayornis fasciatus apsleyi.** Melville-Island White-breasted Honey-eater.

Glyciphila fasciata apsleyi Mathews, Austral Av. Rec. vol. i. 1912, p. 49: Melville Island.

A nest found in January was dome-shaped, the opening near the top; it was built in a Paper-bark sapling leaning over Jessie Creek, and suspended from the end of a limb at a height of three feet from the water. The materials used were broad and fine strips of Paper-bark lightly fastened together with cobwebs; the lining consisted of very soft pieces of the same materials; on the outside were a few leaves. Dimensions: outside, 4½ by 2¾ by 8 inches deep; inside, 2½ by 2 by 4 inches deep.

It contained one fresh egg of the Honey-eater and two Cuckoo's eggs partly incubated. Most of the nests of this species contained an egg of a Cuckoo.

Eggs. Clutch two; white, with numerous reddish spots all over, but more at the larger end. Axis 20 to 20·5 mm., diameter 14·5.

This species is a real water-lover, and is never seen far from it. It is very common on the north side, and rather rare on Apsley Strait, but was more numerous after the rain had filled some of the creeks. On the north side this bird was found all along the creeks and swamps. It is a resident.

149. **Conopophila albogularis albogularis.** Rufous-breasted Honey-eater.

Entomophila? albigularis Gould, Proc. Zool. Soc. for 1842, 1843, p. 137: Port Essington.

This is another bird that was rare on Apsley Straits, but very common on the north side of the Island. On Apsley Straits it was found only in the mangroves and on the north side along the water-courses and in the big Paper-bark swamps. It is never found far from water. It was mating in January and is resident.

150. **Stigmatops indistincta melvillensis.** Melville-Island Least Honey-eater.

Stigmatops indistincta melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 50: Melville Island.

This species is very numerous, and frequents the outer edges of the mangrove-thicket—that is, on the landward side.

151. **Meliphaga sonora cooperi.** Melville-Island Singing Honey-eater.

Ptilotis sonora cooperi Mathews, Austral Av. Rec. vol. i. 1912, p. 50: Melville Island.

This Honey-eater frequents patches of stunted scrub a little inland, and lives on berries, honey, and insects.

152. **Ptilotula flavescens melvillensis.** Northern Yellow-tinted Honey-eater.

Ptilotis flavescens melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 50: Melville Island.

This species is common and is usually found in open forest, but is also seen on the outer edge of the mangroves. It is not so common on the north side and is a resident.

153. **Stomiopera unicolor brenda.** Melville-Island White-gaped Honey-eater.

Ptilotis unicolor brenda Mathews, Austral Av. Rec. vol. i. 1912, p. 50: Melville Island.

These birds are sparingly distributed in the forest-country. On the heavily timbered creeks they are rather numerous. The creeks usually have a dense growth of creepers, etc., covering the big trees, and in places the trees are covered with a cane not unlike ratan; near these dense growths the birds are most abundant. A few were seen on the north side in the jungles. They feed on berries, small figs, honey and insects, and are non-migratory.

154. **Myzantha flavigula melvillensis.** Melville-Island Yellow Minah.

Myzantha flavigula melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 51: Melville Island.

These birds are fairly numerous on the high ridge four miles from Apsley Straits, but are never seen near the sea or on the north side. They go in flocks of about twenty birds, and are very noisy and inquisitive. If one is wounded and calls out, the whole flock quickly gathers round. They feed on honey and insects, searching for the latter on the ground.

155. **Entomyzon cyanotis apsleyi.** Melville-Island White-quilled Honey-eater.

Entomyzon cyanotis apsleyi Mathews, Austral Av. Rec. vol. i. 1912, p. 51: Melville Island.

Very plentiful where trees are in bloom, especially on the north side. They are usually seen in small parties of about half a dozen individuals.

156. **Philemon argenticeps argenticeps.** Silvery-crowned Friar-Bird.

Tropidorhynchus argenticeps Gould, Proc. Zool. Soc. for 1839, 1840, p. 144: Port Essington.

This species is the common Friar-Bird of the Island, and is found both in the forest-country and in the mangroves whenever the trees or shrubs are in flower. Nests, placed about 35 feet up, at the end of a horizontal limb, were found in October and November. It is non-migratory.

157. **Neophilemon buceroides gordoni.** Melville-Island Helmeted Friar-Bird.

Philemon buceroides gordoni Mathews, Austral Av. Rec. vol. i. 1912, p. 102 : Melville Island.

Common.

158. **Microphilemon orientalis breda.** Melville-Island Little Friar-Bird.

Philemon orientalis breda Mathews, Austral Av. Rec. vol. i. 1912, p. 51 : Melville Island.

Rather rare on the Island, and not found on the north side. It frequents forests and the heavily-timbered creeks. It lives on honey and insects, and is a resident.

159. **Anthus australis rogersi.** Melville-Island Pipit.

Anthus australis rogersi Mathews, Austral Av. Rec. vol. i. 1912, p. 193 : Melville Island.

160. **Mirafra javanica melvillensis.** Northern Bush-Lark.

Mirafra javanica melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 102 : Melville Island.

161. **Lonchura castaneothorax apsleyi.** Melville-Island Dark-breasted Finch.

Munia castaneothorax apsleyi Mathews, Austral Av. Rec. vol. i. 1912, p. 52 : Melville Island.

This Finch is found in great numbers in the mangroves, and, when shot at, flies across to Bathurst Island, which appears to be its stronghold.

162. **Mimeta sagittata affinis.** Northern Oriole.

Oriolus affinis Gould, Birds Austr. vol. i. 1848, Introd. p. liii : Port Essington.

This bird was plentiful in October, but got less abundant up till December, when it quite left the Island. It is found in the jungle and open forest, and lives on fruit and insects.

163. **Mimeta flavocincta flavocincta.** Yellow Oriole.

Mimetes flavocinctus King, Survey Intertrop. Coasts Austr. 1826, p. 419 : Northern Territory.

This species is common in the jungles and in the heavy growth along the creeks as well as in the mangroves. In January many nests were found usually in small Paper-bark trees ; all were built of the soft outer bark of this tree. One found on the 28th of October was placed at the end of a thin horizontal limb about 35 feet from the ground. This bird lives principally on fruit but also on insects, and is a resident.

164. **Sphecotheres flaviventris ashbyi.** Northern Yellow-bellied Fig-Bird.

Sphecotheres flaviventris ashbyi Mathews, Nov. Zool. vol. xviii. 1912, p. 436 : Alligator River, Northern Territory.

The nest was built in a Paper-bark tree growing on the edge of the great swamp—the water was about 6 inches deep round the base of the tree. It was placed in a fork of a horizontal limb about six feet above the water. The outside of the nest had long strips of Paper-bark (some 20 inches long) hanging down from it, which were attached to the nest with cobwebs. The nest was cup-shaped, and composed of broad strips of Paper-bark, fastened together with cobwebs and cocoons and lined with fine twigs. Dimensions : outside, 8 inches by 5 by 4½ deep ; inside, 4 by 3 by 2¾ deep.

Eggs. Clutch two ; ground-colour pale stone, sparingly covered with spots of yellowish brown and lavender. Axis 31·5 mm., diameter 23. Taken January 4, 1912.

This species is common, and usually found near the creeks or other places where the growth is fairly dense, such as the Paper-bark forests. On January the 28th eggs were just ready to be hatched. It is a migrant.

165. **Dicruropsis bracteatus baileyi.** Northern Spangled Drongo.

Dicruropsis bracteatus baileyi Mathews, Nov. Zool. vol. xviii. 1912, p. 437: Alligator River, Northern Territory.

The nest was cup-shaped and placed in the fork of a tree, and constructed of fine tendrils with no lining; many cocoons were plastered on the outside. Outside measurements 6 inches by 3 deep, inside 3½ by 1¼ deep.

Eggs. Clutch three; whitish, with irregular-shaped spots of reddish and lavender, sparsely distributed over the surface, but more thickly at the larger end. Axis 30 mm., diameter 20 mm. Taken October 22, 1913.

These birds are fairly numerous in all localities, but seem to prefer the open forest. They go about in pairs or small parties, and feed chiefly on dragon-flies which they catch very skilfully, always from below. The nests are placed in a fork of a thin horizontal branch about 30 feet from the ground, and were found during October and November. One, taken on the 24th of November, had three young almost fledged.

166. **Rogersornis nuchalis melvillensis.** Melville-Island Bower-Bird.

Chlamydera nuchalis melvillensis Mathews, Austral Av. Rec. vol. i. 1912, p. 52: Melville Island.

This species is numerous on the creeks and on the outer edges of the mangroves. Several bowers were found in the last-named locality, just above high-water mark. They are not so common on the north side.

167. **Corvus cecilæ cecilæ.** Northern Crow.

Corvus coronoides cecilæ Mathews, Nov. Zool. vol. xviii. 1912, p. 442: Napier Broome Bay, North-west Australia.

Not easily obtained.

V.—*Obituary.*

ALFRED RUSSEL WALLACE.

THE death of Dr. Wallace, which took place on November the 7th, in his 91st year, severs the last remaining link of the chain of great names of the mid-Victorian era associated with the introduction and confirmation of the doctrine of Evolution by Natural Selection.

First conceived by Charles Darwin as far back as 1842, and communicated only to Sir Charles Lyell and Sir Joseph Hooker, his most intimate friends, it was not till 1858 that he received from Wallace, who was then in the Moluccas, an essay for publication, "On the Tendency of Varieties to depart indefinitely from the Original Type," which almost exactly reproduced Darwin's own views.

Wallace's essay, together with a sketch of Darwin's own ideas, were communicated jointly to the Linnean Society on July the 1st, 1858, and his views were further elaborated in his 'Contributions to the Theory of Natural Selection' (London, 1875) and in 'Darwinism; an Exposition of the Theory of Natural Selection, with some of its Applications' (London, 1889). It was in these two volumes that Wallace contributed to the progress and understanding of the Darwinian doctrines. But he did not quite see eye to eye with Darwin in every respect. He was of opinion that Natural Selection alone could not account for the development of the human race, and adopted views of a teleological character which he elaborated in a later volume, the 'World of Life,' published in 1910, in which he argued that the complexity of the structure of living beings necessarily implied a creative power, a directive mind, and an ultimate purpose, and that man was the one crowning product of the whole cosmic process of development.

Wallace was born at Usk in Monmouthshire, on January 8, 1823, and was educated at Hertford Grammar School. During his early years he first earned his living as a land surveyor and an architect in company with an elder brother, and afterwards as a teacher in a school at Leicester. During these early days he showed a marked taste for natural history, and especially for botany. About 1844 he became acquainted with H. W. Bates, and they formed a plan to make an expedition together to South America, in order to form natural history collections, by the sale of portions of which they hoped to recoup themselves for the expenses of the journey.

Finally they embarked from Liverpool, in 1848, for the Amazon. After working for a year or so together they separated, Wallace exploring the Rio Negro, one of the principal tributaries of the Amazon, while Bates devoted himself to the main river. Wallace returned in 1852, but was unfortunate enough to lose the greater portion of his collections and notes owing to the ship in which he was returning taking fire. In the following year he published an account of his journey, 'Travels on the Amazon and Rio Negro,' as well as a volume on 'The Palm Trees of the Amazon.'

In 1854, having disposed of such specimens as he had saved, he started off for the Malay Archipelago, where he remained for eight years, collecting and exploring, and visiting most of the islands from Sumatra to New Guinea. The collections he brought back numbered over 125,000 specimens, including some 8000 bird-skins, most of which are now in the British Museum. It was during this period, while living at Ternate in the Moluccas, and while he lay suffering from a sharp attack of intermittent fever, that the idea of Natural Selection occurred to him, and three days later he had written out an outline of his theory and posted it to Darwin.

Among other results of his investigations in the east was his discovery of a distinct break in the faunal continuity between Asia and Australia in the narrow strait dividing the two small islands of Bali and Lombok, the former being Asiatic in its affinities, the latter Australian. This line has since come to be known as Wallace's line, and his first communication to 'The Ibis' was a letter on the "Geographical Distribution of Birds," dated Batchian, March 1859, containing criticisms and suggestions in regard to the Zoo-geographical Regions as proposed by Dr. P. L. Sclater in a paper published in the Linnean Society's Journal of the previous year. These studies finally culminated in his classical book 'The Geographical Distribution of Animals' (1876), and that fascinating volume of essays, 'Island Life' (1880). The general account of his wanderings in the east was contained in two volumes on 'The Malay Archipelago,' not published till 1869, but since often reprinted—which forms with Bates' 'River Amazon' and Darwin's 'Journal of Researches' the three most entrancing works of natural-history travels ever written.

After his return from the Dutch Indies Wallace settled down in England, and spent the rest of his long life writing mostly on problems of natural history, but also on those of economics, politics, and psychology, on all of which subjects he held advanced and original views.

He was elected an Extraordinary Member of the B. O. U. in 1860, while still in the east, and between 1859 and 1874 wrote a good many papers in 'The Ibis,' chiefly about the birds he had met with and collected in the Malay Archipelago. A list of these is added to this memoir. He also communicated a series of papers on his ornithological collections to the Zoological Society.

Many honours and distinctions were conferred on Wallace. He was awarded a Royal Medal of the Royal Society in 1868, and in 1890 very appropriately the Darwin Medal, but it was not till 1893 that he was elected a Fellow of the Society. He received honorary degrees of LL.D. from Dublin in 1882, and of D.C.L. from Oxford in 1889, and was chosen a member of the Order of Merit in 1908. In 1881 he was granted a Civil List pension of £200 a year. In addition to many other books on political and social problems he published an autobiography, 'My Life,' in 1905, reissuing it in a condensed form in 1908.

During the latter part of his life he lived at Broadstone, a village in Dorset, about seven miles from Bournemouth, and it was there that he died after a short illness lasting only a few days.

Wallace was perhaps the last distinguished representative of an old type—the naturalist, traveller, biologist, geographer, and knower of species, with a mind always seeking to discover the causes of things, but with no taste for the modern methods of morphology, or for the newer forms of chemical, physical, and mathematical analyses now so much in vogue in zoological research. A man of great human sympathies, always ready to champion the cause of the oppressed and to make the world a better place to live in, he was himself of a gentle and reflective nature and had no ambition to shine forth among his fellow men.

List of Wallace's Contributions to 'The Ibis.'

(1) Letter from Mr. Wallace concerning the Geographical Distribution of Birds. Ibis, 1859, pp. 449–454.

(2) The Ornithology of North Celebes. Ibis, 1860, pp. 140–147.

(3) On the Ornithology of Ceram and Waigiou. Ibis, 1861, pp. 283–291, pl. ix.

(4) Notes on the Ornithology of Timor. Ibis, 1861, pp. 347–351.

(5) On some new Birds from the Northern Moluccas. Ibis, 1862, pp. 348–357.

(6) Notes on *Corvus senex* Garn. & Less., and on *Corvus fuscicapillus* G. R. Gray. Ibis, 1863, pp. 100–102.

(7) Notes on the Fruit-Pigeons of the Genus *Treron*. Ibis, 1863, pp. 318–320.

(8) Remarks on the Value of Osteological Characters in the Classification of Birds. Ibis, 1864, pp. 36–41.

(9) Remarks on the Habits, Distribution, and Affinities of the Genus *Pitta*. Ibis, 1864, pp. 100–114.

(10) Note on *Astur griseiceps* Schlegel. Ibis, 1864, p. 184, pl. v.

(11) On the Pigeons of the Malay Archipelago. Ibis, 1865, pp. 365–400, pl. ix.

(12) On the Raptorial Birds of the Malay Archipelago. Ibis, 1868, pp. 1–27, 215–216, pl. i.

(13) On the Arrangement of the Families constituting the Order Passeres. Ibis, 1874, pp. 406–416.

Richard John Ussher.

We regret to have to record the death, which took place in a private hospital in Dublin on the 12th of November of last year, of Mr. Ussher, of Cappagh, Co. Waterford, well known to most of us as our chief authority on Irish Birds, and a member of our Union.

Born in 1841, Mr. Ussher was brought up as a country gentleman, and was a leading member of a family which had been connected with County Waterford for a long period. His great-grandfather, Capt. Arthur Ussher, served in Marlborough's army, and his father, Mr. Richard Ussher, was a well-known magistrate, who, in the early part of the nineteenth century, showed great energy and capacity in dealing with the disorders of the times in his district, and received the thanks of government for his services.

Though best known as an ornithologist, Ussher was interested in other fields of knowledge. He was a keen student of archæology, and was also given to the exploration of caves, especially that of Castle Pook near Doneraile, where he discovered the remains of the hyæna and other extinct animals, by which he added largely to our knowledge of the early forms of life in Ireland.

He became a member of the Union in 1894, and in 1900, in conjunction with Robert Warren, he published a work on 'The Birds of Ireland' (reviewed in 'Ibis,' 1901, p. 147), the first general account of Irish birds published since 1851, when Thompson's 'Natural History of Ireland' appeared, and which has since remained the standard work on the subject. In 1908 he brought the Irish records up to date in a little brochure, 'A list of Irish Birds,' published as a Guide-book to the bird-collections in the Museum of Science and Art, Dublin.

All Ussher's shorter papers on birds relate to those of Ireland, and are to be found in the pages of the 'Irish Naturalist' or of 'British Birds.' Though at one time an extensive collector of birds' eggs, he became later on a great upholder of the strict preservation of the Irish avifauna.

His death is a great loss to Irish ornithology, and will be deplored by all who have had the pleasure of his personal acquaintance.

WILLIAM JOHN ANSORGE.

THOUGH not a member of our Union, we cannot allow the death of Dr. Ansorge, which took place at Loanda, in Angola, on October 31 last, to pass without a short notice.

Dr. Ansorge was born in Bengal in 1850, and was the son of the late Rev. G. P. Ansorge, of the Church Missionary Society. After being educated at Mauritius and at Pembroke College, Cambridge, he became a Professor at the Royal College, Mauritius, a position which he held till 1886. He then came to England to study medicine, and after obtaining his qualification was appointed a District Medical Officer in Uganda in 1892. While there he made large collections of birds and other animals, and an account of the former, which are now in the Tring Museum, appeared as an appendix, prepared by Dr. Hartert, to his well-known work 'Under the African Sun,' published in 1899, where a vivid account of his experiences and his zoological discoveries in British East Africa and Uganda was embodied. In 1890 he crossed the continent of Africa from east to west, and later on was district medical officer in Nigeria; in this capacity he took part in the Aro expedition, receiving a medal and clasp. He retired from the service shortly after this, but he could not give up travelling and collecting, and he spent most of his remaining years wandering in different parts of Africa.

The British Museum contains a large collection of Angola birds made by him in 1905 and 1908–9, and also a collection made in Portuguese Guinea on his way home in 1909, and many new species and subspecies bear his name. He also collected largely in other groups, especially in mammals and freshwater fishes.

ORA WILLIS KNIGHT.

THE death is announced, in his fortieth year, of Dr. Ora Willis Knight, well known as an authority on the birds of Maine, on which he published the standard book ('The Birds of Maine,' Bangor, Me., 1908), besides contributing many notes on the same subject to the 'Auk.' Dr. Knight was a chemist by profession, and had been consulting chemist and assayer to the State of Maine since 1903.

ANTON FRITSCH.

FROM 'Nature' we learn of the death of Dr. Anton Fritsch of Prague, on November 15, aged eighty-one. He was director of the natural history departments of the Royal Bohemian University and for many years professor of zoology in the same institution. Dr. Fritsch's first published work (1851) was a list of the Bohemian, German, and Latin names of the birds found in Bohemia; and throughout his life he took the deepest interest in the local fauna of his native country. He will perhaps be best remembered for his numerous researches in palæontology, especially in the Permian Amphibia of the "Gaskohle" formation.

VI. *Notices of recent Ornithological Publications.*

Bangs on some Siberian Birds.

[Some Birds from the Highlands of Siberia. By Outram Bangs. Bull. Mus. Comp. Zool. Harvard Coll. liv. 1913, pp. 463-474.]

The expedition during which the collection here described was obtained, took place under the leadership of Dr. Theodore Lyman, of Harvard. He was accompanied by Mr. Hollister and Mr. Klein, the latter a hunter and trapper of great experience, and considering that only five weeks were spent on the collecting-grounds, the results—287 birdskins and almost the same number of mammals—were astonishing.

The localities visited were the Tchegan-Burgazi Pass, the Chiusaya Steppe, and Topucha, all localities near the Russo-Mongolian border east of Lake Balkash in the Altai mountains.

Some 52 forms are enumerated, and among them are discriminated new subspecies of Merlin (*Falco æsalon lymani*), of Pine Grosbeak (*Pinicola enucleator pacata*), and of Siberian Jay (*Perisoreus infaustus opicus*). The Pine Grosbeak is founded on a single specimen and is distinguished by its bill-characters from the typical race, an unsafe character on which to base a new subspecies, especially where only one example was obtained.

Dabbene and Lillo on two new Argentine Birds.

[Description de deux nouvelles espèces d'oiseaux de la Républic Argentine, par Roberto Dabbene et Miguel Lillo. Anales Mus. Nac. Hist. Nat. Buenos Ayres, xxiv. 1913, pp. 187–194, Lám. x., xi.]

From the dry and desert-like valleys between the Andes and the Sierra de Aconquija, in the north-west corner of the Argentine, these two authors describe and figure a new Parrot, *Cyanolyseus andinus*, which nests in holes in inaccessible cliffs in those regions.

They also describe and figure a new Tinamou, *Calopezus intermedius*, from the province of Tucuman in the same part of the Argentine. It lives in small flocks of eight to ten individuals, obtaining scanty nourishment among the few bushes that grow in those desolate regions at an altitude of 7000–8000 feet.

Gifford on the Birds of the Galapagos.

[Expedition of the California Academy of Sciences to the Galapagos Islands, 1905–1906.—VIII. The Birds of the Galapagos Islands, with Observations on the Birds of Cocos and Clipperton Islands (Columbiformes to Pelecaniformes), by Edward Winslow Gifford. Proc. California Acad. Sci. (4) ii. 1913, pp. 1–132, pls. 1–7.]

This expedition was planned in 1905 by Mr. L. M. Loomis, the Director of the Museum of the Academy at San Francisco. Luckily a return was not made till after the earthquake and fire in April 1906, which destroyed all the collections of the Academy and the material gathered by this expedition forms the nucleus of the new collections acquired since the catastrophe.

The primary object of the expedition was the collection and study of the reptilian fauna, but the birdskins brought back numbered no fewer than 8,691: it is obvious that a good deal of attention must have been paid to ornithology.

The schooner of 87 tons, in which the party sailed, was apparently navigated entirely by the scientific staff, and was absent from San Francisco from June 1905 to November 1906, and most of the time was spent among the numerous islands which form the Galapagos group.

In the present contribution only a small portion of the collection is dealt with, and under each species is given a good series of field-notes and detailed observations on the moult and nesting-habits. All the birds recorded seem to have been met with by previous expeditions, nor are there any new species or subspecies described.

Grinnell on new races of North-American Birds.

[*Leucosticte tephrocotis dawsoni*, a new race of Rosy Finch from the Sierra Nevada. By Joseph Grinnell. Condor, xv. 1913, pp. 76–79.

Two new races of the Pigmy Owl from the Pacific Coast. By J. Grinnell. Auk, xxx. 1913, pp. 222–224.]

Mr. Grinnell believes that the Rosy Finch found breeding at 9800 ft. in the Sierra Nevada on the borders of the States of California and Nevada, can be distinguished from that breeding in the northern Rocky Mountains of British Columbia and Alberta by its more greyish tone of plumage and by its rather more rounded wing. This race apparently only migrates to somewhat lower-lying grounds to the eastwards of the breeding-ground, while the typical race is found in winter in Oregon and Colorado.

In the second paper Mr. Grinnell distinguishes two new races of Pigmy Owl—*Glaucidium gnoma vigilante* from the mountain-ranges of southern California, and *G. g. swarthi* from Vancouver Island; while between the two, in the humid coast-regions of central California, occurs the already described *G. g. californicum,* and in the Rocky Mountain region of Colorado and New Mexico *G. g. pinicola.* The alternation of dry and desert tracts with those of intense humidity on the Pacific coast doubtless accounts for the great variation of many of the resident species.

Gurney on the Gannet.

[The Gannet. A Bird with a History. By J. H. Gurney, F.Z.S., M.B.O.U. Pp. lii+567; 25 pls., 1 map. London (Witherby), 1913. 8vo. Price 27*s.* 6*d.*]

In the pages of this delightful volume Mr. Gurney has accomplished a most difficult task with signal success. He set out to make himself the historian of the Gannet, and little that is worth recording seems to have escaped him.

In successive chapters he discusses the name of the Gannet, the several islands which it now inhabits, or has inhabited, its domestic economy, plumage, and anatomy. Flight, mortality, and modes of feeding afford material for other chapters crowded with interesting facts gleaned by laborious research and personal observation. It may be said of this book, indeed, that it furnishes the most exhaustive account of the Gannet which has yet appeared. Only in one particular can it be improved upon, and this concerns the history of the "courtship" period, of which practically nothing is said.

We should be glad to see Mr. Gurney's book circulated among the members of fishery boards, and especially those who imagine they are rendering a service to the community in advocating the slaughter of the Gannet and Cormorant on account of the toll of fish that they take. Their mistaken efforts are begotten of ignorance. Incredible as is the amount of fish eaten by these, and other piscivorous species, their depredations must be regarded as a negligible quantity. Having regard to the prodigious prolificness which fishes display, the process of thinning out, which these birds perform, should be regarded as beneficent, and not otherwise. Further, it is to be remembered that these birds feed largely on species which are themselves piscivorous. But more than all, it must not be forgotten that man himself wastes more than he eats. Every year thousands of tons of fish are condemned as unfit for human food in Billingsgate and other large markets. And it is no uncommon thing for a whole cargo to be jettisoned because it will not pay to land the catch. But our wastefulness does not end here; the system of trawling now in vogue entails the destruction of incalculable quantities of spawn and young fish, to say nothing of the ruin wrought on the breeding-grounds by the destruction of other forms of life on which fishes feed. One of the fishery boards in the south of England is now pursuing this policy of stupidity in regard to the Cormorant, by offering a reward of one shilling a head for each bird killed. A like war was waged a few years ago on the Cormorants on the Murray River, and with disastrous results to the fishing which was to benefit by this slaughter of the innocents. It is a bad policy to kill first and investigate afterwards. Mr. Gurney's comments on this subject are most interesting.

There are two statements in this fascinating book on which more evidence is desirable. On page 97 we are told that in winter "Gannets are often on the wing for forty or fifty hours at a stretch, without alighting to rest on the water . . . ." What evidence is there for this estimate? In a most interesting chapter on the ages of birds Mr. Gurney suggests that the Gannet may live as long as a hundred and fifty years, and in his preface he even extends this period to "two or three hundred years." His inference that the Gannet's viability is great is sound, but it is surely somewhat overestimated.

Apart from the sterling merits of this work, it is handsomely presented and beautifully illustrated, and this being so we marvel at the miserable travesty of a Gannet in flight which is stamped upon the cover; it does not even gain merit by its sheath of gold! W. P. P.

Gyldenstolpe on Birds from Siam.

[Birds collected by the Swedish Zoological Expedition to Siam, 1911–1912. By Nils Gyldenstolpe; with one plate and two figures in the text. Kungl. Svenska Vetenskapsakademiens Handlingar, Band 50, No. 8, 1913, pp. 1–76.]

Mr. Gyldenstolpe spent about six months in Siam, visiting the eastern and northern parts of that kingdom and collecting assiduously. He mentions 191 species in his list, and obtained examples of nearly all these. Two Timeline birds are described as new—*Criniger lönnbergi* from the evergreen forests of northern Siam, and *Rubigula johnsoni* from the Koret plateau in eastern Siam. The male, hitherto undescribed, of *Æthorhynchus xanthotis* Sharpe, was also obtained for the first time and is figured together with the two new species. The introduction contains a good and ample account of the vegetation and other physical features of the country traversed.

Heatherley on the Peregrine.

[The Peregrine Falcon at the Eyrie. By Francis Heatherley, F.R.C.S. With Photographs by the Author and C. J. King. Pp. 1–73; 30 illustr. London (Country Life), 1913. Small 4to. Price 5*s*.]

The photographs here reproduced, together with the notes which accompany them, are the result of work for three successive springs (1910–12) at the same eyrie by Dr. Heatherley and his friends. The exact situation of this eyrie he wisely does not reveal, and though he dedicates his work to "all egg collectors," he suggests a simple method to employ to circumvent them in their pursuit:—"Wet each egg, and then scrawl all over it with a violet marking-ink pencil. This has no prejudicial effect on incubation, but renders the egg useless to collectors, as the violet marks are more indelible than the natural blotches."

The field-notes and photographs were made from a portable observation-shed made of tent-material, which was erected close up to the eyrie; and from this Dr. Heatherley and his friends kept the birds under continuous observation for no fewer than thirteen days and nights during the spring of 1911. The result is an extraordinary collection of intimate pictures of the Peregrines feeding and brooding their downy young from the age of two days after hatching, till they were twenty-nine days old.

Among the more interesting observations recorded is the fact that the female Peregrine, a few days after the young are hatched, turns over to the tiercel (male) the duties usually assigned to her sex and spends most of her time foraging and bringing the quarry to the tiercel, who remains in the eyrie to feed and look after the young.

Dr. Heatherley concludes his interesting notes with some valuable advice on the subject of bird-photography, of which he here shows himself so complete an adept.

La Touche on the Birds of Chinwangtao, China.

[List of Birds observed at Chinwangtao and in the neighbouring districts of North-east Chihli: in Decennial Reports, 1902–11 of Commissioner of the Imperial Chinese Customs. Pp. 175.]

The port of Chinwangtao lies on the west coast of the Gulf of Liaotung, about 122 miles to the north-east of Taku, the port of Peking. It derives its importance as being ice-free in winter and also from its close proximity to valuable coal-fields, and has been open to foreign trade since 1898. Our fellow-member Mr. J. D. D. La Touche, who is stationed at Chinwangtao in charge of the Imperial Maritime Customs, has incorporated in his report on the trade and revenue of the port a list of birds observed by him in that neighbourhood. These are 234 in number, out of which only 58 appear to be breeders, the others being all winter visitors and migrants.

We hope that Mr. La Touche will be able to extend this list and publish it with further details later on in some more accessible form.

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. iii. part 3; pp. 205–300, pls. 151–166. London (Witherby), 1913. 4to.]

This part of Mr. Mathews' work continues the Sandpiper alliance and proceeds to the Woodcocks and Snipes. The illustrations are even better than usual, and the quotations from various writers with regard to the habits of the birds are full and well chosen. Perhaps the point of greatest interest is the discussion of the genera, for after full consideration the author thinks it advisable to propose no fewer than nine that are new for the Snipes and Woodcocks alone, as follows:—

Ditelmias for the species *hardwicki* Gray = *australis* preoccupied.
Parascolopax ,, ,, *saturata.*
Chubbia ,, ,, *stricklandi.*
Homoscolopax ,, ,, *imperialis.*
Neospilura ,, ,, *solitaria.*
Macrodura ,, ,, *nobilis.*
Odurella ,, ,, *brasiliensis.*
Eugallinago ,, ,, *macrodactyla.*
Subspilura ,, ,, *megala.*

In the Sandpiper group he has:—

Anteliotringa for the species *tenuirostris* Horsf. (= *crassirostris* auctt.),
Neopisobia subg. n. ,, *damacensis* (= *subminuta* auctt.),

and a new subspecies "*rogersi*" for the eastern form of the Knot.

The following names are accepted for other eastern forms:—

Heteroscelus incanus brevipes (only one trustworthy Australian record of the western form).

Actitis hypoleucus aurita (Latham, ex Watling drawings) the figure having been referred by error to *Tringa acuminata.*

Xenus [*Terekia*] *cinereus javanicus.*

Glottis nebularius glottoides.

Rhyacophilus glareola affinis.

Arenaria [*Calidris*] *leucophæa tridactyla.*

Limicola falcinellus sibirica (first recorded by the author.)

Erolia ferruginea chinensis.

Pisobia minuta ruficollis.

Only one record of Bartram's Sandpiper is admitted for Australia, while a description is given of the hitherto unknown egg of *Pagoa* [*Ægialitis*] *geoffroyi* on the authority of Mr. Stuart Baker.

Useful woodcuts are given in the *Tringa* group to show the difference in the tail of the species "*acuminata*" and "*minuta*," and the similarity in those of the latter and "*fuscicollis*." In the plate of the Curlew Sandpiper the first name is accidently printed "Curley."

Mathews' New Check-list of Australian Birds.

[A List of the Birds of Australia. By Gregory M. Mathews, F.R.S.E., containing the names and synonyms connected with each genus, species, and subspecies of birds found in Australia, at present known to the author. Pp. xxiv+332. London (Witherby), 1913. 8vo.]

The indefatigable Mr. Mathews has now issued a new check-list of Australian birds. If our memory serves us correctly this is the third list apart from his larger descriptive work now being issued in parts on the same subject. Mr. Mathews' first list appeared as a supplement to the 'Emu' in 1908 and contained 880 species and subspecies; the second, published in 'Novitates Zoologicæ' in 1912, contained about 1450; the present list, which forms a separate publication, has not the species and subspecies numbered, but as about seven go to a page and there are 317 pages, the number of separate forms recognized must exceed 2000.

Whether Australian and other workers in ornithology will be able to recognize the distinctness and the usefulness, even if distinguishable, of all these many subspecies, generally only possible to identify with large series for comparison and with access to the types in Mr. Mathews' collection, time alone can show; but Mr. Mathews claims that the nomenclature has been very carefully determined, and is based on strict priority as interpreted by the code of rules formulated by the International Congresses of Zoology, and that whether we accept all his subspecies or not his nomenclature must stand.

With regard to the law of priority it is a matter on which all systematic workers have been in times past and now are agreed, that it is only by its strict application under some code of generally recognized laws that can bring us to finality in this tiresome matter of nomenclature; there can be no doubt that in the past, many workers have neglected to carry out the rules to their logical conclusion for fear of introducing changes distasteful to themselves and to others in sympathy with them.

As to the present volume, so far as we have been able to judge, the work is very complete and accurate, the type of each genus and the method by which such types are designated being indicated. All synonyms are given, at any rate so far as Australian species are concerned, and in the case of species and subspecies the type locality of each has been carefully noted. It is therefore quite easy for any worker to use this list, even if he does not approve of the subdivision of the older species into a number of geographical races. At any rate we are nearer finality than we should be if we adopted the system recently proposed by a committee of the Royal Australian Ornithologists' Union, recently published in 'The Emu' and reviewed in the last number of 'The Ibis.' This is supposed to be based on the work of Gould and on the 'Catalogue of the Birds in the British Museum,' and its adoption could only lead to the most hopeless confusion.

Mr. Mathews' Introduction contains a most useful history of the progress of our systematic knowledge of Australian birds, commencing from Gmelin's work, published in 1788, in which Latin names were given to a few birds described under English vernacular names by Latham in his 'Synopsis.' These had been brought to England by the naturalists attached to Captain Cook's ships during his famous voyages of circumnavigation.

In another section of the Introduction the zoogeographical relations of Australian birds are discussed. Mr. Mathews draws attention to what he believes to be an antarctic element in the avifauna, and instances such genera as

Tribonyx and *Cereopsis* as having an antarctic origin. To prove this, however, it is necessary to postulate considerable changes in the distribution of land and water, and great alterations of climate in tertiary times, and at present there seems to be hardly enough evidence of this. There seems to be no reason to reject the hypothesis that the Australian avifauna originally reached the continent from the north, but at so long a period ago that it has become profoundly modified.

Hedley and Spenser recognize three faunal regions in Australia—the Eyrean, the Bassian, and the Torresian. Of these the Torresian includes most of the Northern Territory and Queensland ; the Bassian, Victoria, coastal New South Wales, and Tasmania ; and Eyrean, Western and Southern Australia and the dry central regions. These faunal divisions of the Australian continent are touched on by Mr. Mathews, who also points out the significance of island faunas, and that similar "island faunas" occur within the continent, such as the Mallee country on the borders of Victoria and New South Wales and the Bellenden Ker Range of Queensland, where the avifauna differs in a most remarkable way from that of the surrounding districts.

No worker in Australian ornithology can afford to pass over this laborious and painstaking volume, and we should like to congratulate not only the author but the publisher on the excellent manner in which the volume has been produced.

Mearns on new African Birds.

[Descriptions of four new African Thrushes of the Genera *Planesticus* and *Geocichla*, by Edgar A. Mearns. Smiths. Miscell. Coll. vol. 61, no. 10, 1913, pp. 1–5.

Descriptions of six new African birds. *Id. ibid.* no. 11, 1913, pp. 1–5.

Descriptions of five new African Weaver-birds of the Genera *Othyphantes*, *Hypargos*, *Aidemosyne*, and *Lagonosticta*. *Id. ibid.* no. 14, 1913, pp. 1–5.]

These new species and subspecies were all obtained in east or north-east Africa, some by the author when with Col. Roosevelt in his celebrated journey from British East

Africa to Egypt, some by Mr. Edmund Heller, who accompanied Mr. Paul J. Rainey's expedition during which the interesting cinema films were obtained which have been shown in London. Others, again, were got during the Childs Frick Expedition which traversed Abyssinia and British East Africa.

Without seeing the specimens described it is not possible to make criticisms, but we cannot but deplore the description of new subspecies of *Cisticola* from single specimens without comparison with the material contained in the far more extensive collections of the Old World museums.

Millais' Diving Ducks.

[British Diving Ducks. By J. G. Millais, F.Z.S., M.B.O.U.; with forty-two plates (seventeen of which are coloured) by Archibald Thorburn, O. Murray Dixon, H. Grönvold, and the Author. Vol. ii. Pp. xii.+164. London (Longmans), 1913. 4to.]

The first volume of this magnificent work was noticed in 'The Ibis' last July, and now the appearance of the second volume completes Mr. Millais' account of both the Surface-feeding and Diving Ducks of the British Islands.

The present volume contains accounts of the three Eider Ducks, the three Scoters, and the four Mergansers recorded from the British Islands, and of these only the Common Eider, the Common Scoter, the Goosander, and the Red-breasted Merganser can be considered as breeding birds; the Velvet Scoter and the Smew are only winter visitors, while the King and Steller's Eider, the Surf Scoter, and the Hooded Merganser are only vagrants in the British Islands.

Mr. Millais devotes most of the letterpress to the Eider, and describes at great length its plumage-changes, illustrating these with eight plates of photographs of skins obtained for the most part by himself in the Orkney Islands, where his personal experiences have chiefly been, and his account of the flight, diving-power, food, and breeding habits of this bird make most interesting reading.

In the paragraphs dealing with the genus *Somateria* he writes at some length on the various races or subspecies of the Eiders, and though on page 1 he states "at present it is difficult to separate the Eiders of the British Isles, Denmark, Norway and those from Finmark eastwards," on the following page he distinctly recognizes as separate subspecies :—

Somateria mollissima mollissima (Linn.), the typical race from Scandinavia.
S. m. borealis Brehm, from Greenland and Labrador.
S. m. britannica subsp. n., from the British Islands.
S. m. dresseri Sharpe, from the Atlantic coasts of N. America.
S. m. færöeensis Brehm, from the Faeroes.
S. m. islandica Brehm, from Iceland.
S. m. norvegica Brehm, from Norway.
S. m. v.-nigra Gray, from N.W. America and N.E. Asia.

It seems very doubtful whether it will be possible to maintain all these subspecies, especially the two found in Scandinavia; most of the distinctions given appear to rest on the coloration of the soft parts which fade rapidly after death, and require, therefore, most careful attention at the time of collecting.

In his account of the species Mr. Millais makes little or no further reference to the question of subspecies, nor does he discuss the question of subspecies in the case of any other of the species dealt with.

As usual, the illustrations are magnificent; among them we would pick out for special commendation Thorburn's Eider Duck, which forms the frontispiece. This has been beautifully reproduced by Frisch of Berlin. Mr. Millais has himself painted the King Eider, the reproduction of which, by Messrs. André & Sleigh of Bushey, quite comes up to Frisch's work.

The volume concludes with a chapter on shooting methods and another on rearing ducks for shooting and on breeding and rearing ornamental wild-fowl in confinement. We must congratulate Mr. Millais on the successful completion of this most sumptuous series of volumes.

Reiser on the Great Spotted Cuckoo.

[Ueber die Erbeutung eines Häherkuckucks, *Clamator glandarius* (L.), und eine wichtige Örtlichkeit zur Beobachtung des Vogelzuges. Von O. Reiser. Orn. Jahrb. xxv. 1913, pp. 81–85.]

In this short note Dr. Reiser recounts the circumstances under which an example of the Great Spotted Cuckoo was obtained on the banks of the Naventa in southern Dalmatia on the 1st of April last. It is the second record of its occurrence in Dalmatia, as well as in the whole of Austro-Hungary.

Ridgway on Colour Nomenclature.

[Colour Standards and Colour Nomenclature. By Robert Ridgway, M.S., C.M.Z.S., etc., etc. With fifty-three coloured Plates and eleven hundred and fifteen named colours. Pp. 1–44, pls. 1–53. Washington (publ. by the Author), 1912. 8vo. London (Wm. Wesley & Son). Price £1 15*s*.]

This work was intended to be originally a second edition of the author's 'Nomenclature of Colours,' published in 1886, and now long out of print and very difficult to obtain.

Some two or three years after the publication of the first-named work Mr. Ridgway began to devise plans and gather materials for a new book on the subject. His time, however, has been so fully occupied by other matters that progress has been necessarily slow; but after more than twenty years of sporadic effort it has at last been completed.

The greater part of the present work is occupied by the fifty-three plates, on each of which there is represented samples of twenty-seven shades or tints of colours, all named, and by means of these it will be possible, if they are generally used, as we hope they may be, to standardize the nomenclature of colours in descriptive zoology. At present few things are more vague than the nomenclature of colour in zoology. Every author has his own ideas and his own nomenclature, and there is great confusion and ambiguity. If authors were to adopt some such code as is contained in this little work, their descriptions would be more intelligible to their readers.

Great pains have been taken both in the selection of the colours and in their reproduction to insure permanent constancy.

Stresemann on Malayan Birds.

[Ornithologische Miszellen aus dem indo-australischen Gebiet. II. Teil. Von Erwin Stresemann. Novitates Zool. xx. 1913, pp. 289–324.

Die Vögel von Bali. Aus den zoologischen Ergebnissen der II. Freiburger Molukken-Expedition. Von Erwin Stresemann. Ibid. pp. 325–387, pl. ii.

Über eine Vogelsammlung aus Misol. Aus den zoologischen Ergebnissen der II. Freiburger Molukken-Expedition. Von Erwin Stresemann. Journ. f. Ornith. 1913, pp. 597–611.]

In 'The Ibis' for April of last year (p. 338) will be found some account of Mr. Stresemann's expedition to the Dutch Indies, and he is now engaged in working out the results at Tring. In the first of the papers now noticed he discusses the various subspecific forms of *Artamus leucorhynchos*, *Hypothymis azurea*, *Eurystomus orientalis*, *Amaurornis phœnicura*, *Baza subcristata*, *Cinnyris clementiæ*, *Macropygia ruficeps*, *Alcedo ispida*, *Thriponax javensis*, and *Centropus sinensis*, among which many novelties are described for the first time.

The second paper deals with the avifauna of the island of Bali, lying to the eastwards of Java, and separated from the next more easterly-lying island of Lombok by Wallace's line, so often referred to in works on geographical distribution. Since Wallace's time—and he only spent two days in June 1856 on the island—the only collector who has visited Bali is William Doherty, who was there for two months in 1896, and whose collections were described by Dr. Hartert in the third volume of the Novitates Zoologicæ. The number of species known from the island before Mr. Stresemann's visit was 96; to these are now added 53, making 149 in all. Doherty only collected on the north coast, while Mr. Stresemann travelled right across the centre of the island, reaching an elevation of 6500 ft. in the central district; and no doubt it is owing to his having been able to penetrate into the interior of the island that he has been able to make such large additions to the avifauna.

A considerable number of new subspecific forms are described not only from Bali but from some of the other Malayan islands. Perhaps the most interesting is a new subspecies of *Phylloscopus* (*P. borealis examinandus*) which winters in the southern islands from Bali to Flores and Sumba, while the typical form which breeds on Lake Baikal goes to the Philippines, Celebes, and the Moluccas. The interesting new Starling (*Leucopsar rothschildi*) described last year in the Bulletin of the Club is figured, as is also *Gracupica tertia*, obtained previously by Doherty and described by Hartert, which is found both in Bali and Lombok.

A very interesting table at the end of the paper, giving the distribution of the Bali birds eastwards and westwards, shows very plainly how marked a break occurs between Bali and Lombok, and how few species seem to have been able to spread across Wallace's line.

The third paper deals with a less interesting collection of birds from Mysol, in the Moluccas, which has been visited by a good many collectors since Wallace's time. Here Dr. Tauern, a member of the expedition, spent from August to October 1911 and obtained examples of 71 species, four of which were new to the island and one a new subspecies. The fauna of this island is fairly uniformly distributed, as the elevation of the highest part of the interior does not exceed 900 feet.

Swarth on the Arizona Bush-Tit.

[The Status of Lloyd's Bush-Tit as a Bird of Arizona. By H. S. Swarth. Auk, xxx. 1913, pp. 399–401.]

Mr. Swarth finds that *Psaltriparus santaritæ*, described by Ridgway (Proc. U.S. Nat. Mus. x. 1888, p. 697) from the Santa Rita mountains, Arizona, is a juvenile plumage-stage of *P. plumbeus* and not of *P. lloydi* as had been supposed by

Oberholser, and that there is no evidence of the occurrence of the last-named species within the boundaries of the State of Arizona.

Trevor-Battye on Crete.

[Camping in Crete. With notes upon the animal and plant life of the Island. By Aubyn Trevor-Battye, M.A., &c. Pp. xxi+308; 32 plates and a map. London (Witherby), 1913. 8vo. Price 10*s*. 6*d*.]

Mr. Trevor-Battye has written a very pleasant and readable account of his wanderings in Crete, which, though so often seen from ships coming and going to the east, is comparatively seldom visited by the tourist. Yet it is a fascinating islet, something like Sicily, but greener and full of waters—as beautiful as Corfu without that island's exotic note.

Our author concerns himself in the present volume neither with international politics nor with excavations and antiquities, the two matters which have made Crete conspicuous among Mediterranean islands, but gives us a series of simple pictures of the natural features and of the inhabitants, which he has noticed while wandering from one end of the island to the other. Interspersed with these will be found interesting notices of the various birds met with, and these are all summarized into a list on pp. 257–263, of those seen or obtained during a visit between the months of March and June.

The photographs with which the volume is illustrated are all, with the exception of five, from Mr. Trevor-Battye's own camera, and an excellent map makes it quite easy to follow his various routes.

The perusal of this work makes one long to be able to follow in the author's footsteps and visit this fascinating island. Beyond this no further commendation is needed.

Witherby on the Rook.

[The Sequence of Plumages of the Rook. With Special Reference to the Moult of the "Face." By H. F. Witherby. British Birds, vii. 1913, pp. 126–139, pls. 4–11.]

As is well known, the young Rook has a feathered face like other members of the Crow family, while in the adults the face and chin are quite bare of feathers, and it is a curious fact that in the case of so common a bird this change has never been properly investigated, indeed it has been suggested that the Rook gets its bare face by digging for worms!

Mr. Witherby has taken up this question, and has been able to examine Rooks obtained nearly every week throughout the year, and he here gives the results of his studies.

The young Rook, whose face is fully feathered, moults his face and chin in July or August, but the face-feathers are quickly replaced by new ones; though Mr. Witherby believes that he can detect some signs of degeneracy even then. In January, or even a month or two later, a second face-moult begins. The face-feathers now drop out and are replaced by "pins" and a few very degenerate plumule-like feathers; the bare skin at first is pink and soft but gets hard and whitish, while plumules and pins wear down, though remnants of them can be seen with a glass even in the autumn. At the second autumn moult and every subsequent one, while the chin becomes covered with a blackish grey down of plumules the sides of the face only produce a few minute bristles, and these, at least the chin-down, disappear before January by abrasion, leaving this space quite bare until the following autumn.

Mr. Witherby's paper is illustrated by a series of photographs showing the Rook's chin at various seasons and ages, and we must congratulate him on having carried through a sound piece of work.

Migration Report for 1912.

[Report on the immigrations of summer residents in the spring of 1912: also notes on the migratory movements and records received from lighthouses and light-vessels during the autumn of 1911. By the Committee appointed by the British Ornithologists' Club. Being Volume xxxii. of the Bulletin of the British Ornithologists' Club. London (Witherby), 1913. 8vo.]

This is the eighth report of the Committee of the B. O. C., the members of which were first elected in December 1904 and whose first report was issued in February 1906. All the reports are drawn up on the same lines so that comparisons can be more easily made, and it is hoped that at the end of ten years it will be possible to make a digest of all the observations from which deductions may be drawn which will solve or help to solve some of the mysteries of this great problem.

During the spring of 1912 the weather was, on the whole, very favourable and migration commenced early (on the 6th of March), and individuals of many species arrived in various parts of the country at unusually early dates.

The autumn migration of 1912 had no feature to which attention need be specially drawn. The weather during early autumn was unusually warm and fine and the departing birds seemed to have slipped away quietly and in small parties, so that observations were not easy to make.

An interesting feature of the winter of 1911–12 was the great irruption of Little Auks, many hundreds of which, having been driven southwards, were blown inland by gales and perished miserably in all parts of the country.

We would strongly urge members of the B.O.U. and others to assist the committee by purchasing the report. The funds at their disposal are very scanty, and if more ornithologists would help by buying a copy of the report, it would assist the committee very considerably,

The Auk.

[The Auk: a Quarterly Journal of Ornithology. Vol. xxx. for 1913. Cambridge, Mass., U.S.A.]

In noticing the 'Auk' it is hardly possible to do more than give an outline of the contents of the principal articles; they are here roughly classified according to subject-matter.

1. Faunal—United States.

Messrs. A. H. Wright and F. Harper (pp. 477–505, pls. 14–20) have a long and interesting article on the birds met with by them in the Okefinokee swamp. This is a large tract of about 660 square miles in southern Georgia and extending over the boundary into Florida. It has been very little explored owing to its inaccessibility and to the difficulty of penetrating into it, and so it remains very much in its original condition, and but little modified by human occupation. It consists of a series of islands covered with pine barrens, cypress (*Taxodium*) bays, and prairies, *i. e.* open swamps and water courses. Within its limits are a number of birds now becoming very scarce in most parts of the United States, such as the Water Turkey (*Anhinga anhinga*), the Lumpkin (*Aramus vociferus*), the Wild Turkey (*Meleagris silvestris*), and the Pileated Woodpecker (*Phlœotomus pileatus*), as well as several of the swamp-loving Warblers (Mniotiltidæ), rare elsewhere. The authors, with several other naturalists, chiefly entomologists, all from Cornell University, spent over two months of the summer of 1912 exploring and collecting, and their field-notes, with an interesting introduction, are here set out and illustrated by photographs of the types of scenery.

O. E. Baynard (pp. 240–247) writes on the breeding birds of Alachua county in central Florida, where there are probably more Egrets surviving than in any other part of the States. There are two rookeries strictly preserved, one by the National Association of Audubon Societies, and others which will probably be guarded in future. The two species *Herodias egretta* and *Egretta candidissima* are rapidly increasing owing to the protection afforded to them.

E. S. Cameron, M.B.O.U., a resident in Montana, has some interesting field-notes on the nesting habits, food, and changes of plumage of *Buteo swainsoni* (pp. 167–176, 381–394), a much persecuted bird, which is yearly becoming more scarce, though it does little or no harm. This paper is illustrated with photographs of a nest situated in a lonely cottonwood tree, and of the changes of plumage.

G. Eifrig (pp. 236–240) records his observations on some rarer birds noticed during several years past at Addison, Ill., a town about 20 miles west of Chicago, in prairie country.

S. S. Visher (pp. 561–573) contributes an annotated list of the birds of Sanborn county, S. Dakota, a typical prairie region.

Other faunal papers are by A. H. Norton (pp. 574–576) on rare birds in Maine; H. Thurston and H. S. Boyle (pp. 542–545) on the birds of Long Island; H. S. Hathaway (pp. 545–558) on birds from Rhode Island; and F. M. Western (pp. 418–421) on birds from the highlands of N. Carolina.

2. Faunal—Outside the United States.

B. W. Evermann (pp. 15–18) records eighteen birds new to the Pribiloff Islands in Behring Sea; three of these, the Tufted Duck, the European Pochard, and Tengmalm's Owl are new additions to the North American fauna. These birds were collected and many observations made by Dr. Walter L. Hahn, who was appointed naturalist to the fur-seal service of the American Bureau of Fisheries in 1910, and who lost his life the following year by exposure in the ice-cold water of a lagoon, owing to the capsizing of a boat. He was succeeded by M. C. Marsh, who has continued the ornithological observations.

Dr. C. W. Townsend contributes some further notes on Labrador birds (pp. 1–10, pls. i.–ii.), and complains bitterly of the increasing scarcity of the sea-birds along the coasts.

J. H. Fleming, Col.M.B.O.U. (pp. 225–228) has some notes on the birds round Toronto, supplementary to his paper in the 'Auk' for 1906 and 1907.

L. L. Jewel, one of the engineers of the Panama Canal (pp. 422–429), writes interestingly on the North American migrants he has noticed in the neighbourhood of the Gatún dam, and calls special attention to the very short time which some of the northern birds are absent from the tropics. The Spotted Sandpiper (*Actitis macularia*) has been recorded for every month in the year except May and June, and the Yellow Warbler (*Dendroica æ. æstiva*) every month except June and July.

J. L. Peters (pp. 367–380) spent four months (Jan.–Apl. 1912) on the Hondo river, the frontier between British Honduras and Yucatan, collecting for the Harvard Museum. Among the 132 species obtained he finds four new subspecies of the genera *Rupornis, Ortalis, Melopelia,* and *Cardinalis.*

3. Anatomical.

H. L. Clark has some valuable contributions on the anatomy and systematic relationships of various genera. In his first contribution (pp. 11–15) he discusses the characters of *Rhodinocichla rosea eximia* Ridgway from Panama. It was regarded by Sharpe (Brit. Mus. Cat. 1881) as one of the Miminæ and by Ridgway as an aberrant Mniotiltid. Mr. Clark considers that it is on the whole most nearly allied to *Mitrospingus,* and should be placed with the Tanagers.

In a second paper (pp. 262–267) are given anatomical notes on *Saltator, Chlorophonia,* and *Euphonia.* He regards the first as a finch allied to *Pipilo,* the second as "having no special relationship to the Tanagers," while *Euphonia* differs considerably from *Chlorophonia*, and seems to "approach some of the Cœrebidæ."

The third paper (pp. 402–406) deals with the anatomy and relationships of *Todus, Oxyruncus,* and *Spindalis.*

It is to be hoped that Mr. Clark will continue these valuable researches on a subject so much neglected by most systematic ornithologists.

4. Migration.

Witmer Stone has reprinted with comments (pp. 325–358, pls. ix.–xi.) the interesting calendar kept by Wm. Bartram, of Philadelphia, from 1802–1822, in which are recorded the arrival of migrants in his garden, which though then in the country is now within the city limits, and is preserved as a public park under the name of Bartram's garden. Mr. Stone has rearranged the entries in the diary in systematic order, and illustrates his paper with a portrait of Bartram and a sketch of his house still standing in the garden.

Other papers on migration are by H. H. Cleaves (pp. 248–261) on "bird-banding" or bird marking in the United States; by W. W. Cooke (pp. 205–221) on the connection and relation of migration and weather conditions; and by J. C. Phillips (pp. 191–204) on the periodic accuracy of bird-migration.

5. Song and Flight.

H. W. Wright contributes a second paper on the early morning and late evening song of birds (pp. 512–537). He finds the earliest birds to greet the dawn are Flycatchers (Tyrannidæ), Sparrows, and Thrushes, and of these the Wood Pewee (*Myiochanes virens*) commences the chorus at about 82 minutes before sunrise, while the last bird to sing in the evening is the Thrush (*Hylocichla swainsoni*), which ceases 37 minutes after sunset. Apparently the silence of the night in New Hampshire is never broken by the song of a Nightingale or any other night-singing bird.

R. T. Moore (pp. 177–187) has reduced to musical notation the song of the Fox Sparrow (*Passerella iliaca*) in the Magdalen Islands of the Gulf of St. Lawrence, its most southern breeding limit.

Alex. Forbes (p. 359) writes on the gliding flight of Gulls often noticed behind or on the lee side of a steamer, when the wind is nearly ahead. He believes that these birds are able to glide horizontally, without moving their wings, through the agency of ascending currents caused by the movement of the ship against the wind.

6. Avian Palæontology.

The veteran R. W. Shufeldt (pp. 29–39) contributes an article on the extinct Meleagridæ of the United States. He gives an account of three species, which were described by Marsh many years ago on what Dr. Shufeldt regards as quite insufficient evidence owing to the fragmentary nature of the remains.

Journal für Ornithologie.

[Journal für Ornithologie. Herausgegeben von Prof. Dr. Ant. Reichenow. 61 Jahrgang, 1913. Heft 1 to 4 and 2 Sonderheft.]

This magazine is the father of all ornithological periodicals; the first volume dates from 1853, so that it is seven years older than 'The Ibis.' The number of articles in the present volume is very large, and all that we can do here is to give some indication of the principal contents.

Of faunistic articles :—

H. Frhr. Geyr von Schweppenburg (pp. 146–161) writes on the birds observed during the last two years in East and West Prussia.

Dr. Erich Hesse (pp. 618–630) gives an account of a great resort of the Common Crane, the "Havellandisches Luch," a marshy and comparatively wild region about six miles north-west of Berlin, where he has observed these birds at close quarters for many years.

N. Sarudny and M. Härms (pp. 630–661) continue their studies on the birds of Persia. In the present contribution they discuss the Sparrows of the genera *Petronia, Gymnoris,* and *Passer*, of which they recognize twelve distinct forms.

Dr. H. Weigold (pp. 1–40 & 561–597) spent the spring of 1911 in western Asia, and in the first article he writes on the birds of the neighbourhood of Urfa in north-western Mesopotamia, where he found that the river Euphrates forms a boundary between two zoogeographical regions ; to the west of the river *Agrobates galactoides syrica* was the breeding bird, on the east *A. g. familiaris*. The month of March was spent in the valley of the Menander inland from Smyrna ; in his second contribution he gives some field-notes of the birds seen there.

H. Grote (pp. 125–142) concludes his notices of the birds of the south-east portion of German East Africa ; no new forms are described.

Adalbert Klaptocz (pp. 444–455) writes on the birds collected or met with by him in French Guinea. Short field-notes are given and no new species are described.

Erwin Stresemann (pp. 597–611) contributes an article on a collection of birds made by Dr. O. Tauern in Mysol, one of the Molucca Islands. This has been separately noticed (see p. 153).

Of systematic papers :—

O. Neumann and O. Graf Zedlitz revise the genus *Cercomela,* containing a number of Chat-like birds from the desert country of north-east Africa and south-west Asia. Four species are recognized, and their various subspecific forms reviewed; two new subspecies are named.

Of Oological papers:—

Dr. H. Szielasko (pp. 52–117 & 229–361) has an important paper, illustrated by several plates, on the structure of the egg-shell in various groups of birds, and on its correlations with classification and taxonomy.

Forester Wendlandt (pp. 409–443) reviews the breeding habits of European Owls, giving elaborate measurements of the very large series of eggs he has been able to examine.

L. Schuster (pp. 540–546) describes the nests and eggs of various birds met with by him in German East Africa.

Of papers on migration and allied subjects:—

Prof. Jägerskiöld, of the Gothenburg Museum (pp. 380–388), relates how he "ringed" 76 Rough-legged Buzzards in Swedish Lapland in July 1911, and gives a sketch-map showing the localities, chiefly in Prussia to the south of the Baltic, whence as many as twelve of these were subsequently recaptured.

Paul Kollibay (pp. 612–617) writes on the irruption of the Siberian Nutcracker into Silesia in the spring of 1911.

F. von Lucanus (pp. 117–124) finds from observations made from air-ships that the flight of birds is very seldom at altitudes over 400 m. (=1200 ft.), while no birds at all have been hitherto detected at an elevation of over 1000 m.

Of papers on Zoogeography:—

Dr. E. Snethlage writes (pp. 469–539) on the geographical distribution of birds in the region of the lower Amazon basin, and discusses their relation to the botanical divisions of the same area. These are: the virgin forest above flood-level, the prairie or campos region above flood-level, and the corresponding regions below the flood-level of the great rivers. A fifth region, the "Capoeira," where the forest has been cleared by man and its place taken by secondary growth, is recognised. Each of these regions possesss its special avifaunal facies, which is here discussed.

Miss Snethlage further points out that the Amazon itself and some of its larger tributaries form a well-defined boundary between distinct faunal areas.

The two "Sonderhefts" contain the annual reports on the "bird-watching" stations, the first by Dr. Hugo Weigold on that of Helgoland, the other on that of Rossitten in East Prussia by Dr. Thienemann.

Trans. N. Zealand Inst.

[Transactions and Proceedings of the New Zealand Institute for the year 1912. Vol. xlv. 1913. Pp. viii+490.]

Of the papers devoted to ornithology in this volume, the first is by Mr. Tom Iredale (pp. 78–92) concerning the avifauna of the Kermadec Islands. He gives a list of the birds actually observed by him in this group during his visit in 1908, with their correct names under the strict rules of nomenclature and a few notes on their synonymy and occurrence. In the preliminary part of the paper he discusses the zoogeographical relations of three groups of islands—Lord Howe, Norfolk, and Kermadec, which lie in a west-east line between New Caledonia and the Fiji group on the north, Australia on the west, and New Zealand on the south. Mr. Iredale believes from his study not only of the avifauna of this but of other groups, that the relations of Lord Howe are almost entirely with New Caledonia and not with New Zealand. In the case of Norfolk Island the basic element is New Caledonian, but there is also a Neozelanic element as evidenced by the presence of *Nestor* and a Fruit-Pigeon (*Hemiphaga*). On the other hand, the Kermadecs do not appear to have derived their fauna from New Caledonia at all, but are characterized "by their strong Polynesian facies with a Neozelanic basis."

On pp. 92–93 Mr. Oliver gives a few additional notes obtained, since his visit there with Mr. Iredale, on the birds of the Kermadecs.

Article LI. (pp. 387–397) is taken up by an interesting account of New Zealand bird-song by Mr. J. C. Andersen. It is a continuation of others previously published. He has listened to and reduced to musical notation no fewer than 79 different songs of the Tui (*Prosthemadera*), and has done the same for many other native New Zealand birds.

Other Ornithological Publications received.

AGASSIZ, G. R. Letters and Recollections of Alexander Agassiz. (London & New York, 1913.)

FAXON, W. Brewster's Warbler (*Helminthophila leucobronchialis*). (Mem. Mus. Comp. Zool. Coll. Vol. xl. No. 6. Harvard, 1913.)

GRINNELL, J. The Willow Ptarmigan. The National Association of Audubon Societies Educational Leaflet, No. 60. (Bird-Lore, 1912, 4 pp., 1 col. plate.)

GRINNELL, J., & SWARTH, H. S. An account of the Birds and Mammals of the San Jacinto area of S. California. (Calif. Univ. Publns. Vol. x. No. 10. Berkeley, 1913.)

LECHNER, A. A. van PELT. Oologica Neerlandica. (Parts 4–6. The Hague, 1913.)

NORTH, A. J. Nests and Eggs of Birds found breeding in Australia and Tasmania. (Vol. iv. pt. 3. Sydney, 1913.)

SHUFELDT, R. W. The American Grouse and their Identification. Part I. (Outer's Book. Milwaukee, 1913.)

———. Fossil Feathers and some heretofore undescribed Fossil Birds. (Journ. of Geol. Vol. xxi. No. 7, 1913.)

TAYLOR, W. P. Synopsis of the Recent Campaign for the Conservation of Wild Life in California. (Condor, Vol. xv. 1813, pp. 125–128.)

THOMSON, A. L. Aberdeen University Bird-Migration Inquiry: First Interim Report (1909–12). (Scottish Nat. 1912–13.)

TODD, W. E. C. Preliminary Diagnose of apparently new Birds from Tropical America. (Proc. Biol. Soc. Washington, Vol. xxvi. 1913, pp. 169–174.)

TSCHUSI ZU SCHMIDHOFFEN, V. R. v. Ornithologisches Literatur Österreich-Ungarns, 1912. (Verh. zool.-bot. Gesels. Wien, 1913.)

TYLER, J. G. Some Birds of the Fresno District, California. (Cooper Crn. Club, Pacific Coast Avifauna, No. 9. Hollywood, 1913.)

Vaucher, A. Observations sur quelques Bartavelles du Bassin du Tessin. (Boll. Soc. Ticinese Sci. Nat., Anno viii. 1912.)

Annals of the Cyprus Nat. Hist. Soc. (No. 4, 1912–13. Nicosia, 1913.)

The Austral Avian Record. (Vol. ii. Nos. 2, 3. London, 1913.)

Avicultural Magazine. (3rd Series, Vol. v. Nos. 1, 2, 1913.)

Bird Notes. (New Series, Vol. iv. Nos. 10–12, 1913.)

British Birds. (Vol. vii. Nos. 5–7, 1913.)

Bull. Brit. Orn. Club. (No. cxc. 1913.)

The Condor. (Vol. xv. No. 5, 1913.)

The Emu. (Vol. xiii. pt. 2, 1913.)

Le Gerfaut. Revue Belge d'Ornithologie. (3rd Année, No. 10. Bruxelles, 1913.)

Irish Naturalist. (Vol. xxii. Nos. 10–12, 1913.)

Messager Ornithologique. (No. 3. Moscow, 1913.)

Die Schwalbe. Bericht des Komitees für Ornithologische Beobachtungs-Stationen in Österreich. (Neue Folge iii. 1912–13. Wien, 1913.)

The Scottish Naturalist. (Nos. 22–24, 1913.)

Zoologischer Anzeiger. (Bd. xlii. Nos. 11–13; Bd. xliii. Nos. 1–6, 1913.)

VII.—*Letters, Extracts, and Notes.*

We have received the following letters addressed "to the Editor":—

Sir,—Might I bring the following interesting occurrence of the Baikal Teal [*Nettion formosum* (Georgi)] to your notice. During my stay in Malta last spring I made the acquaintance of a local ornithologist, Despott by name. In his collection of birds I was rather surprised to discover a beautiful example of the Baikal Teal, and on enquiring into its history I learned the following facts:—

A local sportsman, Fidele Caruana by name, on the 16th of April, 1913, shot one of three ducks of this species which he discovered swimming alone in St. George's Bay, Birzebbugia, Malta. As its identity puzzled him he brought the bird to Despott, who purchased it for his collection. I enclose a photograph of the specimen in question, which will be seen to be a male bird. I was assured that there was absolutely no possibility of its having escaped from confinement, but the beauty and freshness of its plumage when I saw it towards the end of April would seem to be in themselves sufficient proof of this.

I am, Sir,
Yours &c.,
J. Russell Kennedy, R.N.

H.M.S. 'Prince of Wales,'
Lamlash, 12 Oct., 1913.

Sir,—In 'The Ibis' for October, p. 709, I observe a reproduction of an "interview" from 'The Times' in July last. I regret that several inaccuracies—not to be laid to the Editor's account—occur both in the general statements and in the nomenclature of the avian species referred to in the article, which would require not a few words to rectify (if it were worth them) and would only cumber valuable space. Permit me, therefore, to beg my fellow members not to charge them as *father's* sins.

I am, Sir,
Yours &c.,
Henry O. Forbes.

Redcliffe,
Beaconsfield,
15 Nov., 1913.

Sir,—In 'The Ibis' for July there appears an instalment of Messrs. Mathews and Iredale's erudite Reference List of the Birds of New Zealand. I have been studying it carefully to try and discover my old familiar friends after their re-christening, but it has proved a very difficult task. I consider that such a List without any details of the why and wherefore of the wholesale changes they propose as authoritative, is imposing a rather large order on their brethren.

Ornithological tyros like myself who may be engaged, as I happen at present to be, on the study of the New Zealand avifauna, must either use the old "antiquated" nomenclature or wait till our new High Priests inform us why *Hypoleucus*, for instance, is to replace, and how it differs from, *Phalacrocorax*. To take another example: Why is the type of *Stictocarbo* now re-designated *punctatus*, instead of *gaimardi*? Surely, if the type falls for any reason, the genus falls with it.

I shall put a strong curb on my pen if I may be permitted one further short criticism. On p. 420 a new species is described as *Nesierax pottsi* on a "*presumed* (italics the writer's) smaller form" of Bush Hawk. "If later investigation," so the authors continue, "proves that the smaller species is non-existent as *we anticipate* (italics as before), we also *suggest* (italics ditto) that the North Island form will prove separable from the South Island one and the name here given will then be available for that." Is it scientific or according to any existing laws of nomenclature to create a new species on such a basis of conjecture? Moreover, is the future worker on New Zealand ornithology to be dictated to as to the naming of a species that comes for description before him? No author has any right to prepare beforehand a list of names for hypothetical birds and try to tie his future fellow-workers to their use and then calmly claim the priority for such designations. If "as we anticipate" the smaller species should turn out to be "non-existent," and the North Island form should prove *not* "separable from the South Island one," then the literature of the subject has been burdened by a useless name, which might have better remained in the ovary of the future.

I am, Sir,
Yours &c.,
Henry O. Forbes.

Redcliffe,
Beaconsfield,
15 Nov., 1913.

Sir,—It may interest some of your readers to learn that an immature Greenland Falcon (*Falco candicans*) flew on board the 'Braemar Castle' in Lat. 38° N. and Long. 12° W. (W. of Lisbon) on October the 21st, and was caught when perching in the rigging. I think this must be the "farthest south" for this species. Large flocks of Pomatorhine Skuas (*Stercorarius pomatorhinus*) were passed in the air and on the water in the Bay of Biscay, some fifty miles south-west of Ushant, on October the 19th, which were evidently migrating southward.

I am, Sir,
Yours &c.,
Philip W. Munn.

Laverstoke, Hants,
December 4, 1913.

Mr. George L. Bates writes as follows from Bitye, German Cameroon, under the date 30 *Aug.*, 1913.—The most interesting thing in the way of field-work that I can report is a trip last January to Akonolinga on the Nyong River north of here. The distance is perhaps between 75 and 100 miles from Bitye, by the indirect road one has to travel. I had never been in that direction before, and was surprised at the great change in the look of the country in so short a distance. Akonolinga is at the edge of the "grass-land." There is still forest to be seen about there in places, but a large part of the country is covered with big grass ten feet high, with only a few trees in it. The wide river-bottom there, which is doubtless overflowed in the wet season, was in January a grassy plain, the grass being of a smaller kind than that on the high ground. On this grassy bottom, one who had long been accustomed to the paths and the confined views of this forest country, could feel the delightful sensation of being able to see and to walk at will in any direction. Here many birds were found, including a number of species, especially of the Weaver-bird family, that I had never seen before. There were also a good number of European winter migrants, which are rarely seen here in the forest region.

Especially were Swallows there in immense numbers, skimming by day over the river-bottom plain, especially over parts of it where water was still standing, and gathering in huge flocks to roost at night in the tall grass of the higher ground. As mosquitoes were very abundant, it seems a reasonable guess to suppose that the Swallows were attracted by the numbers of mosquitoes upon which to feed. Only two specimens of *Hirundo rustica* had previously been obtained during many years collecting at various places in this forest region. It would seem that the bulk of the southward winter migration stops in Africa at the edge of the great forest.

Since I have naturally found little that was new lately among the birds here at Bitye, where I have collected so long, I have been turning my attention to a more thorough study of the same old species. I wish I could say I had been learning more about their habits and way of life, which would have been the most interesting kind of study; but my eyesight is not good enough for that. I have been studying pterylography, especially under wing-coverts, which, as I think, promise to furnish valuable taxonomic characters. I have also been dipping a little into anatomy, and it seems to me that I have already been rewarded by happening upon a valuable discovery. I have found that the syrinx in birds of the genus *Smithornis* is either entirely without muscles attached to the bronchial semi-rings, or possesses possibly a single pair of very thin muscles that have escaped my notice. And having bethought me to dissect the muscles and tendons of the leg and foot in the last specimen of *Smithornis* obtained, I found that from the lower part of the tendon of the *Musculus flexor hallucis* a slender vinculum goes to the tendon of the *M. flexor digitorum profundus*, uniting with it a little above the point where it divides into branches going to the three front toes. I feel sufficiently sure of the correctness of these observations to report them now. But of course I will lose no opportunity of confirming them, and I hope to make myself more familiar with those points in the anatomy of all birds. To find here in Africa, where the lower or anomalous families of Passerine birds have not been hitherto known to be represented except by the *Pitta*, which is merely a stray from the Indian Region, a genus belonging to the anomalous Passerines would be a matter of some importance, especially as I suspect that *Smithornis* will not be found to fit easily into any established family.

The International Commission of Zoological Nomenclature.—In the Zoologischer Anzeiger (vol. xlii. 1913, pp. 418–432 and 473–480) will be found the report of this Commission or Committee appointed by the International Zoological Congress some years ago to advise them on the subject of the codification of the rules of zoological nomenclature. The report of what took place at Monaco in the spring of this year should be carefully studied by all who are interested in this important but vexing question. Perhaps the most interesting action of the Commission as regards ornithological nomenclature is the preparation of a list of 169 generic names of birds with their authorities, references, genotypes, and method of type fixation, based on the International Rules and unanimously agreed upon by a special committee of professional ornithologists consisting of the following:—J. A. Allen (New York), E. Hartert (Tring), C. E. Hellmayr (Munich), H. C. Oberholser (Washington), C. W. Richmond, secretary (Washington), R. Ridgway (Washington), L. Stejneger (Washington), J. W. Stone (Philadelphia).

This list will be found printed at length on pp. 520–528 of the same volume of the Anzeiger. The first thing which will strike English ornithologists is the preponderance of American names on the committee. England is represented by only one name, that of Dr. Hartert, who though now a resident in England is a German by birth; Germany is represented by one name only, France not at all, while America claims six out of the eight names of those on the

Committee. It would be as well, if the Committee hope to get their recommendations and lists of genera universally adopted, to add a few more representatives of other countries to their numbers.

If we now examine the list of genera, we shall find that in most cases the names given are those generally accepted. The list is quite a haphazard one of names arranged in alphabetical order, and apparently only those are included about which most ornithologists are agreed. Generic names in regard to which there has been some controversy, such as *Accentor*, *Cinclus*, *Erithacus*, *Saxicola*, and *Apus*, do not appear in it.

The genus *Charadrius*, however, which has usually been associated with the Golden Plover, must be transferred to the Little Ringed Plover, while the Golden Plover becomes *Pluvialis*. Another change adopted some years ago by the American ornithologists and long resisted on this side of the Atlantic, is here laid down. This is the question of the type of the genus *Colymbus* of Linnæus. In England *Colymbus* has been almost universally used for the Divers or Loons, while in America since about 1882 it has been used for the Grebes.

If we turn to the 10th edition of Linnæus where the genus is originally described, we shall find that it includes four species—*arcticus* (Black-throated Diver), *cristatus* (Great Crested Grebe), *auritus* (Slavonian Grebe), and *podiceps* (American Pied-billed Grebe). Linnæus does not designate any type, nor does an examination of his descriptions, synonyms, or quotations throw any light on his opinions or ideas as it so often does in other cases.

The American argument for making "*arcticus*" the type is that Brisson in 1760 used *Colymbus* for the Grebes and *Mergus* for the Loons, and is thus the first reviser of the genus; but in the first place Brisson was not a binomialist nor did he recognize or quote from Linnæus' work. He adopted the genus *Colymbus* from the pre-Linnæan writer Moehring, not from Linnæus, and in no sense can he be called a reviser of Linnæus nor a designator of the type of Linnæus' genus.

On the other hand, Latham (Genl. Synopsis Suppl. i. 1787, pp. 294, 295) very definitely adopted Linnæus' genus *Colymbus* for the Loons, and proposed *Podiceps* for the Grebes.

A reference to the British Museum Catalogue will show that up to 1882 when Stejneger (Proc. U.S. Nat. Mus. v. 1882, p. 42) proposed to use *Urinator* for the Divers, the generic term *Colymbus* had been almost universally applied to these birds.

We hope that American ornithologists will see their way to return to what we in England have always considered the more correct usage of this generic term, and we hope that this note will meet the eye of Dr. Richmond, the secretary of the Committee who drew up the list of names, and that he will ask the Committee to reconsider their decision on this point.

The Generic name Oxynotus *Swains.*—On page 227 of the recently published second part of the fifth volume of Shelley's 'Birds of Africa,' the generic name *Oxynotus* Swainson (Fauna Boreal.-Amer., Birds, p. 483) is used for the little bird known as the "Cusenier" from the island of Mauritius, while *Schetba* Lesson (Traité d'Orn. p. 374) is given as a synonym.

It has been recently pointed out to me by Mr. Tom Iredale, that Swainson's work did not appear until Feb. 1832, whereas Lesson's Traité came out in parts during 1830–31, the portion containing *Schetba* being issued about December 1830 (see Mathews, Nov. Zool. xviii. 1911, p. 14). *Schetba* therefore antedates *Oxynotus*. Unfortunately, however, neither of these names can be used for the Cusenier of Mauritius.

In the case of *Schetba* the type, which is given as *Oxynotus rufiventer*, the Cusenier, in Shelley, is wrongly determined.

A glance at the original description and the list of species given by Lesson will show that the type is obviously (by tautonomy) "le Schetbe" of Buffon=*Lanius rufus* Gm.= *Lantzia rufa* of Madagascar of Shelley's 'Birds' (p. 195), so that it cannot be applied to the Cusenier.

In the case of *Oxynotus* the name is preoccupied by Rafinesque, 1810, for a genus of Fishes.

It is therefore necessary to find a new generic name for the Cusenier of Mauritius, and I would propose **Coquus**, gen. n. (=a cook) as a suitable name with type *Oxynotus rufiventer* Swainson.

The two known species of the genus will therefore be *Coquus rufiventer* (Swains.) from Mauritius, and *Coquus newtoni* (Pollen) from Reunion. Moreover, as *Schetba* Lesson 1830 antedates *Lantzia* Hartl. 1877, the type of which is also *Lanius rufus* Linn., the Rufous Vanga or the Schetbe of Buffon from Madagascar will have in future to be known as *Schetba rufa* (Gmel.).—W. L. SCLATER.

Wild Birds Protection Act.—The Home Secretary has recently appointed a Committee to inquire what action has been taken under the above act for the protection of our wild birds, and to consider whether any amendments of the law or improvements in its administration are required. The members of the Committee are:—The Hon. E. S. Montagu, M.P., Under-Secretary of State for India (chairman); Lord Lucas, Parliamentary Secretary to the Board of Agriculture; Mr. Frank Elliott, of the Home Office; Mr. E. G. B. Meade-Waldo, Mr. W. R. Ogilvie-Grant, and Mr. Hugh S. Gladstone. The secretary to the Committee is Mr. H. R. Scott, of the Home Office, to whom any communications on the subject of the inquiry may be made.

Penguins in South Georgia.—To the October number of the American Museum Journal Mr. R. C. Murphy communicates a graphic and richly illustrated account of his experiences among the petrels, penguins, and sea-elephants of South Georgia during a visit to that desolate island undertaken on behalf of the museum and the Brooklyn Institute, much interesting information being also given with regard to the eight whaling stations on the island. One of the most interesting photographs shows a king-penguin incubating its single egg, which is supported on the "instep," where it is covered by a fold of the skin on the under-surface of the body, the bird standing all the time in the upright posture, and the two sexes relieving one another in the duties of incubation.

The Colonial Office has recently sent a Commission under the leadership of Major Barrett-Hamilton, M.B.O.U., to investigate the condition of the whale and seal fisheries in that desolate antarctic island, and he will doubtless bring us additional information in regard to the bird-life there.

General Index to 'The Ibis.'—Since the last number of 'The Ibis' appeared, a circular has been issued to the Members of the Union asking them to record their wishes in regard to the proposed General Index to 'The Ibis' for the years 1895–1912.

The number of answers received from Members is sufficient to justify the Committee of the Union in proceeding with the work, and it is quite evident that the majority of Members would wish the Index to be prepared on the same lines as the previous one, edited by the late Mr. O. Salvin.

As the cost of this Index volume will be very considerable, and must inevitably strain the financial resources of the Union, the Committee would be very glad to obtain promises of as many subscriptions as possible. The price to Members has been fixed at £1 1*s*.

Arrangements have been completed for the preparation of the Index; the work is now in hand, and it is hoped the volume may be ready for publication some time in the present year.

Change in the method of Publication of 'The Ibis.'—We wish to draw the attention of Members of the Union and of others to a change in the method of the publication and distribution of 'The Ibis' which has recently been arranged by the Committee.

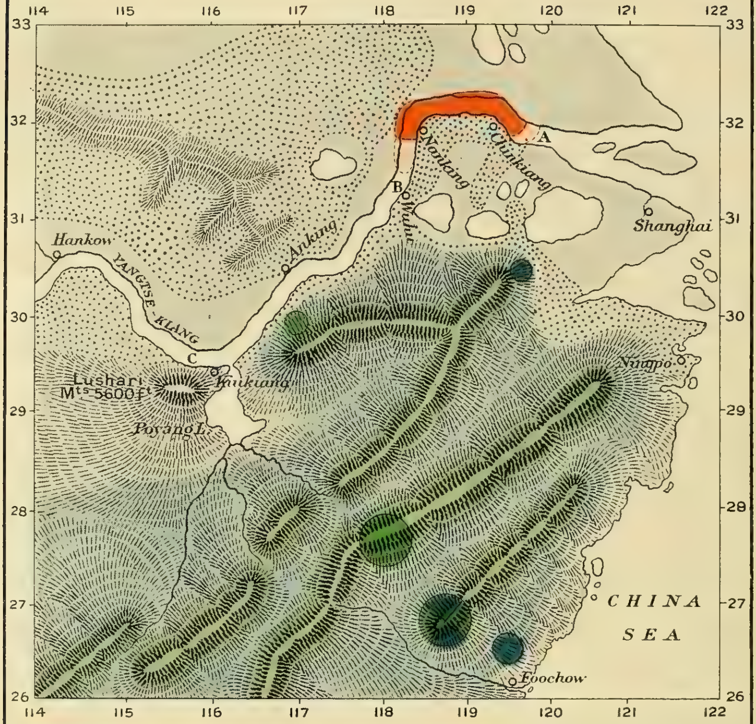
Henceforth the printers, Messrs. Taylor & Francis, will undertake the actual distribution of the copies of 'The Ibis' to all Members of the Union. All changes of address, letters in regard to non-receipt or delay in receiving the Journal should be addressed as heretofore to the Secretary of the B. O. U., c/o The Zoological Society, Regent's Park, London, N.W.

The agency for the sale of 'The Ibis' to the trade and general public has been placed in the hands of Messrs. William Wesley & Son, 28 Essex Street, Strand, W.C. Members of the B. O. U. desiring to purchase any of the publications at the reduced rates allowed to Members of the Union should communicate with Messrs. W. Wesley & Son.

The Annual Meeting of the B. O. U.—Members are reminded that the Annual General Meeting of the Union will be held this year in accordance with the amendment of Rule 12 (now Rule 13) in March. As has been our usual practice of late years, it will take place on the afternoon of the day on which the British Ornithologists' Club meets. Unfortunately on that day the Meeting-Room at the Zoological Society's offices is required by the Society, and is not available.

The Meeting of the B. O. U. will therefore be held at 3.30 P.M. on Wednesday, March the 18th, in the large room at Pagani's Restaurant, 42 Great Portland Street, Oxford Street, W. Proposers of new Members should either attend themselves to speak on behalf of their candidates or send a letter of recommendation to the Secretary.

The usual dinner will be held in conjunction with the B. O. C. at the same place at 7.0 P.M.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DISTRIBUTION OF GENUS "PARADOXORNIS"—CENTL S.E. CHINA.

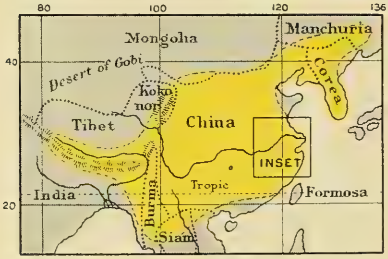
🟥 .... P. heudei (Lower Yangtze only).
🟩 ... P. gularis. Gray.
■ .... P. guttaticollis. David.

Deep tints—Localities actually recorded.
Pale tints—Suggested probable distribution.

▨ .... Mountainous country with altitudes above 3,000 ft. (Max. about 6,000 ft.).
▧ ... Hilly „ „ „ „ 1,000 ft. and below 3,000 ft.
⋯ .... Low hill „ „ „ up to 1,000 ft. (mostly 100-300 ft. only).

Plain tint—Flat, alluvial country.

NOTE. The Yangtze River (only) is shown disproportionately broad to illustrate the distribution of P. heudi. Although there are reed beds all the way from A to C (not elsewhere), those between B and C are comparatively scanty ones, and it seems improbable that P. heudei will ever be found to extend much above B.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40
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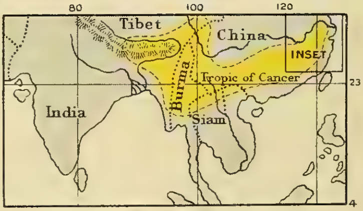
Mongolia
Manchuria
Desert of Gobi
Koko nor
Tibet
China
Corea
INSET
India
Tropic
Formosa
Burma
Siam

Distribution in the World of "PARADOXORNITHINÆ" (Sharpe's Sub-Fam. H. L. Birds omitting Gen. Panurus).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Tibet
China
INSET
Tropic of Cancer
India
Burma
Siam

Distribution in the World of the above 3 species of Genus "Paradoxornis."

viz. {
P. heudei. David.
P. gularis. Gray.
P. guttaticollis. David.

Bale & Danielsson, Ltd.

THE IBIS.

TENTH SERIES.

Vol. II. No. 2. APRIL 1914.

VIII.—*Some Notes on the Habits and Distribution of* Paradoxornis heudei *David.* By Capt. Hubert Lynes, R.N., M.B.O.U.

(Plates VII.–IX.)

PARADOXORNIS HEUDEI, one of the most northerly-ranging of the Oriental group of birds known as "Crow-Tits," was first made known to science in 1872 by Père David* from specimens obtained by Père Heude near Nanking, on the lower Yangtze Kiang. The species has since been made better known by several ornithologists—*e. g.*, Styan (near Nanking, *vide* 'Ibis,' 1891, p. 336), La Touche (near Chinkiang, *vide* 'Ibis,' 1906, p. 438), and others—from the same localities.

All the foregoing information relates to *winter* observations and specimens only; the breeding-habits and range of the species were unknown, and no material for the precise determination of its systematic position appears to have been available, except a few skins obtained in the winter time.

Whilst in command of H.M.S. 'Cadmus,' 1910–12, engaged chiefly on duties in the waters of the lower Yangtze, I was able to make myself more or less familiar with the bird's habits, and to discover its breeding-haunts, proving the species to be strictly sedentary; I was also able to send

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* Comptes Rendus, lxxiv. p. 1449.

Mr. Pycraft some spirit specimens, which are still engaging his attention.

Unfortunately, except for two days in June (when a nest with five eggs and one of the parents were obtained) and half a day in July, the 'Cadmus' was always employed elsewhere during summer and autumn, so that no information could be obtained as to the nestlings or autumn moult; nevertheless, with Mr. Pycraft's results, which will appear in due course, there will be sufficient material to enable one to make a more comprehensive survey of the "Crow-Tit" type and of the life-history of *P. heudei* than has hitherto been possible, and the accompanying remarks are made towards that end.

From what is now known, it is evident that *P. heudei* is one of those sedentary species, similar examples of which are found in many parts of the world, whose range is restricted by that of a certain special environment, presumably always connected directly or indirectly with the maintenance and reproduction of the species.

In this case the special environment is found in the reed-beds of the lower Yangtze. These consist of great areas, both islands and tracts of alluvium lying along the river-banks, covered with a dense growth of giant reeds rising from ten to twenty feet high, and forming a region very distinct from any of the surrounding types of country. It has its own special character of bird-life winter and summer, though the majority of its species are non-residents.

At a rough estimate the reed-beds cover a total area of about 200 square miles*, 75 per cent. of which (including one cluster of islands of 30 and two of 15 square miles of solid reed-growth) lies in the seventy-mile stretch of river that includes the treaty-ports of Nanking and Chinkiang; this constitutes the only *known* home of *P. heudei*.

The remaining 25 per cent. of reed-area is much more spread out, and is not known to be inhabited by *P. heudei*, though it may perhaps turn out to be so, but outside the reed-bed zone the species has never been observed, and almost certainly does not occur. The distribution of the species and its allied forms is graphically shown on the map (Plate VII.).

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* *I. e.*, an area equal to that of the Isle of Wight.

The mode of life of *P. heudei* is so dependent upon the growth of the reeds, that the bird's habits cannot be properly appreciated without some knowledge of the annual changes that occur in the reed-beds; the reader is therefore asked in the accompanying table to follow birds and reeds together "round the year":—

Time of Year.	Reed-beds.	*Paradoxornis heudei.*
Jan. and Feb.	River at its lowest, the reed-beds are high and dry. The seeds being dropped, the Chinaman spreads himself over the land with reaping instruments; the reeds are harvested for fuel and thatching purposes, and either stacked or floated away down the river in junks. By the end of January most of the reeds have been cut, leaving bare yellow-brown expanses of soil with only the pointed stubs sticking up a few inches to indicate the disappearance of the "reed-forests."	At this season *P. h.* comes most of all under the notice of the "foreign devil" who goes to shoot the Pheasants that abound in the reed-beds in winter time. More especially is this the case when the harvest is nearing completion and the standing reeds are reduced in area to a number of comparatively small "islands," in which both Pheasant and *Paradoxornis* are to be found packed. Thus, in a one-acre patch, fifty Pheasants may be beaten out and as many *P. h.* seen, besides numerous Suthoras, Buntings, Pipits, and other small birds.*
March and April.	The river commences to rise. Early in March the young reeds appear above the soil; they grow at an astonishing rate, and by the end of April form dense coverts of green exuberant plant-life from 3 to 6 feet high, their bases accompanied by a thick growth of convolvulus and other clinging plants. At this season insects do not appear to have commenced their attacks on the reeds.	This is the lean time of year for *P. h.*, for the growing reeds have not yet begun to be used as nurseries for the numerous insects that form their staple diet. The birds therefore have to pick up a precarious existence from other sources, maybe from the few last year's reeds not thought worth cutting by reason of their standing in water at reaping-time, or from stacks and thatches, for which latter purpose the birds will come right into the farms on the raised ground bordering the reed-beds. This, presumably, is the season at which the birds have been observed by David and La Touche out of the reed-beds.

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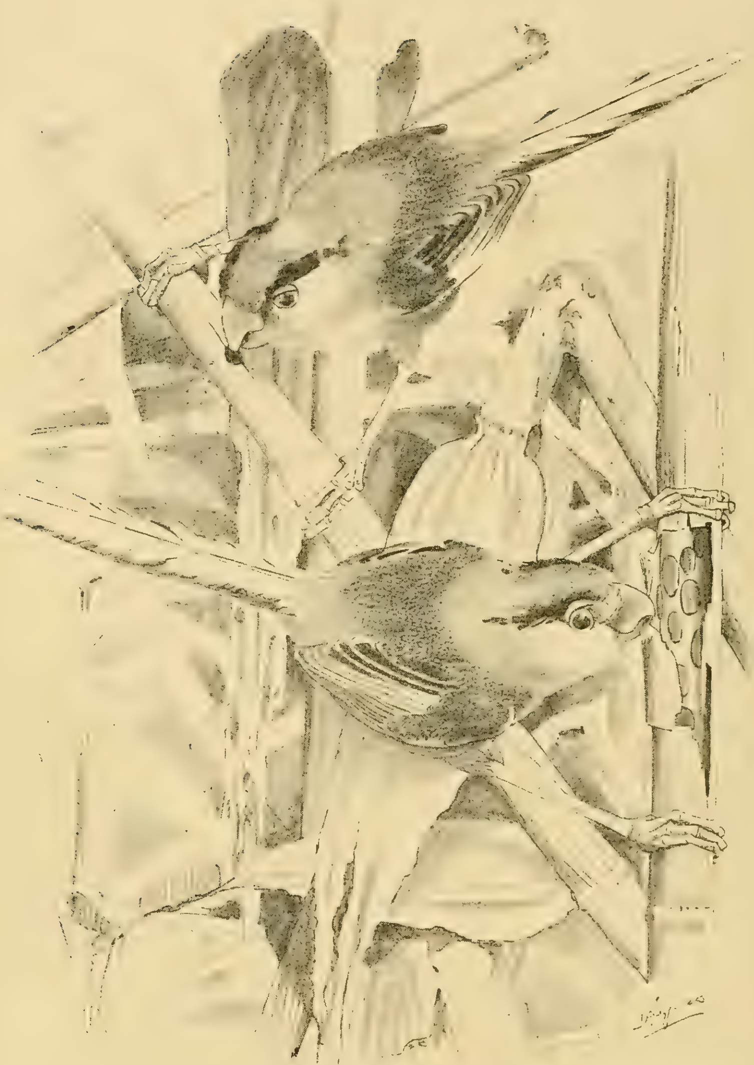
* *Suthora webbiana, Emberiza pallasi, E. spodocephala, Anthus blakistoni,* &c

Time of Year.	Reed-beds.	*Paradoxornis heudei.*
May, June, July.	The river continues to rise in consequence of the melting of the snow in the mountains of Tibet and western China; in normal years June sees the reed-beds beginning to flood and July the maximum height of the river for the year, when the reeds are all standing in not less than a foot of water; but should the rainfall in the lower basin be abnormally heavy, four feet or even more. The reeds reach their full development about July, and are then from 10 to 20 feet high. During this period many insects, such as earwigs, spiders, &c., attack various parts of the reeds, to make homes for their offspring.	*P. h.* returns to its home among the reeds, which once more furnish insect-food in abundance. Nests are built, woven around the reed-stems, in Reed-Warbler fashion, some distance above their bases, and egg-laying commences in June.
August, Sept., October.	The river falls slowly, but in normal years not enough to uncover the main "beds." The seeds ripen. The summer bird-visitors, such as Reed-Warblers, Ardeidæ, &c., depart, and the winter-visitors commence to arrive.	A time of peace and plenty for *P. h.*, the supply of insect-food is at its greatest abundance, and its haunts are undisturbed by man. Presumably an autumn "complete" moult is undergone at this season.
Nov., Dec.	The river falls faster, and during November (in normal years) the reed-beds once more become high and dry. Many winter bird-visitors from the north, Buntings predominating, besides Pheasants from the neighbouring lands, congregate in the now dry reed-beds and subsist on the various seeds and fruits of the reeds water-plants, and undergrowth.	Whatever autumnal moult may have been carried out is finished by November.

Food.

The result of much observation in the field and the examination of some twenty gizzard-contents prove that in the months of November, December, January, February, April, and June, the food is entirely insects and their larvæ, and it is highly probable that the same holds good all the

Ibis. 1914. Pl. VIII.



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PARADOXORNIS HEUDEI.

year round*; the lack of gizzard-muscle is opposed to the digestion of hard things. The food easiest obtained and which appears in all stomachs examined, frequently to the exclusion of all else, is a curious insect shaped like a flat capsule with a transparent tough coat, resembling a miniature oval pancake about $\frac{1}{4}'' \times \frac{1}{5}''$. These are found in most of the reeds, lying in clusters near the nodes, plastered on the hard stem of the reed and covered by the sheath, which only requires to be stripped off to disclose the capsules —an operation that presents no difficulty to the beak even of so small a bird as the Penduline Tit (*Ægithalos consobrina*). But the massive bill of *Paradoxornis* is designed for heavier work, and is, in fact, used for tearing open the hard reed-stems themselves, to obtain access to their pithy centres—no light job with reeds of such gigantic stature.

The *modus operandi* is first to discover the tiny circular hole by which the insect originally gained access to the interior of the reed, then, having inserted the point of the upper mandible in the hole and grasped the reed with wide-straddled feet, it wrenches and twists, swinging with the whole weight of the body until sufficient strips have been torn away to open up the insect-larder inside. (See Plate VIII.)

The rustling, crunching, and tearing noises made by a party of birds so engaged may frequently be heard before catching sight of them; and so the flock works steadily through the reed-forest, flitting from one reed to another, generally alighting near the base and climbing upwards—a ceaseless round of examination, tearing, wrenching, and assimilation, so absorbing that there seems time for little else.

Generally, as one advances in dry reed-jungle, where every step produces elephant-crashing noises, the bird-population, warned, flits on ahead, and is difficult of approach. Not so *P. heudei*, he is much too busy and unconcerned to give the intruder more than an inquisitive stare; even if one of his mates is shot alongside him, he will probably merely suspend his absorbing search after food (as if in pained surprise at the noise) for a few moments only.

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* This is at variance with Styan, 'Ibis,' 1891, p. 386.

When disturbed at the nest, however, as might be expected, more concern is shown, the owners will then flutter about the reeds with expanding wings and tail, "swearing" in an undertone.

The call-note is a musical trill, which may be likened to a softly blown pea-whistle and reminds one somewhat of the spring call of our Nuthatch. It is for these trills that it is necessary to listen, in order to locate the birds both winter and summer. Repeated strophes of the trill probably do service as a song, but there is no real one.

In alarm, as when roused from the nest, there may be an undertone of Crow-like "swearing" or a guttural "chup-chup" in conjunction with the trill.

Nidification.

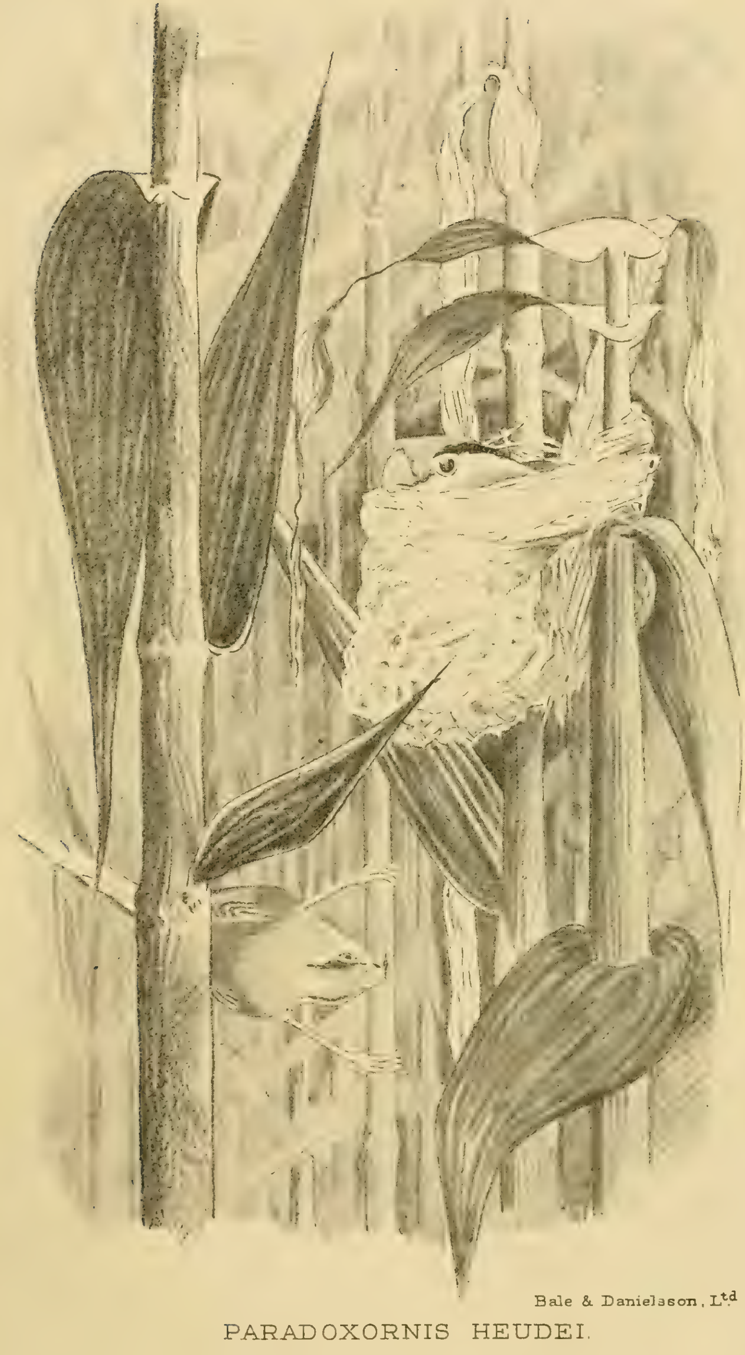
Nest-building appears to commence in June; the one nest, obtained on the 11th of June, with five fresh eggs, may have been an early one, for another, only just begun (at which the male bird was shot), was found on the following day.

The completed nest is a beautiful structure (Plate IX.), woven entirely out of strips torn off dead reeds by the birds themselves; just one or two pieces of cobweb appear in the binding.

It is cup-shaped, supported in mid-air by two reeds (in Reed-Warbler fashion) at a height of five and a half feet above the ground. Its main body is of strips of the sheath part of the reed, about one-tenth of an inch broad; the lining, rim, and binding strands are mostly mere filaments of the tough reed-stems themselves.

The dimensions are as follows:—Inside: width 2 inches, depth 2¼; outside: width about 3¼ inches, depth about 3¾.

The eggs are oval in shape, of smooth texture, and medium gloss; the ground-colour is white, tinged with greenish. The markings consist of large blotches and clouds of pale sienna



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with centres of darker sienna and of burnt-umber; here and there are underlying blotches and spots of pale inky purple. Two of the five eggs have the markings disposed mainly in a wreath round the large end; the blotches being sharper-edged and their colour purer than in the other three.

The eggs have a distinct family resemblance to those of some of the other Paradoxornithinæ in the British Museum, but not to those of the genus *Suthora*, which are uniform in colour.

Measurements:—Length, max. 18·8 mm., min. 18, average 18·3. Breadth, max. 14·5 mm., min. 14·2, average 14·4.

Remarks.

The discovery of its nest and eggs serves, in its degree, to strengthen the generic relationship of *P. heudei* with *P. gularis, P. ruficeps,* and *P. guttaticollis*; but the difficult question of the relationship of the *Paradoxornis* group with the genera *Suthora, Conostoma, Cholornis,* and especially with *Panurus,* the most debateable, interesting, and (fortunately) accessible of all, must await Mr. Pycraft's investigations on the spirit-specimens. I would remark, however, that, in so far as the characters of nests and eggs affect the question, *Suthora*, with its whole-coloured eggs, does not appear to be so closely related as perhaps the birds' external characters seem to show.

From the distribution chart, it will be seen that, besides being infinitely more restricted than that of its presumably nearest allies, the range of *P. heudei* is situated at the extreme north-eastern limit of the range of its genus, whose centre of distribution is eminently a sub-tropical one. It is therefore more reasonable to attribute the origin of this species to the extension of an ancestral form from a more remotely established subtropical centre of distribution, than to consider the species as a relic of a once more northerly-ranging group.

I am convinced that only by the very gradual process of natural adaptation could the species continue to exist and reproduce away from its chosen reed-beds, where an isolation as complete as that of any insular form readily accounts for the absence of intermediate links between itself and its nearest allies.

From the foregoing it will be observed that the following conditions appear to be necessary to the continued existence of the species:—

(*a*) The existence of the reeds themselves.
(*b*) A sufficiency of food in the vicinity during March and April, when practically all the reeds have been harvested
(*c*) An elevated position of nest.
(*d*) Continued immunity from persecution.

Concerning *a*, *b*, and *c*, there is little to be said that has not already been explained in the foregoing pages: *a* is certainly a somewhat arbitrary statement; nevertheless, for the reasons given, and for others beyond the scope of this paper, which only personal acquaintance with the birds and the local conditions can give, I think it is justifiable.

With regard to *d*, there is more to be said. Natural enemies are probably not a serious consideration. During the period of reproduction, the birds are safeguarded against terrestrial enemies by the annual flooding of the reed-beds, and although the reeds swarm with mice, who rear their offspring in elevated ball-nests during the summer-time, it is unlikely that any abnormal plague of larger rodents, which might arise either from natural causes or at the hand of mankind, could survive the summer floods.

In summer there are few winged enemies, and in winter, although Sparrow-Hawks, Buzzards, and Harriers abound, it is evident that they do not take undue toll of *Paradoxornis*, nor is there reason to foresee an abnormal increase of birds-of-prey in the district.

The vital point is that the species should continue to be of no importance to mankind; for, with the bird's indifference to his presence, decimation could very easily be accomplished towards the end of the reed-cutting in January and

February, with consequent extermination in a very few years' time. Fortunately, however, there is nothing at present to suggest the likelihood of such a calamity. Their insect diet perhaps makes the birds difficult to keep in captivity, for the species does not appear in the cages of that inveterate "bird-fancier," John Chinaman; they have no ornamental plumes, stores of oil, or other such possessions likely to attract the attention of the utilitarian, so that, despite their isolation, singularity of habitat, and indifference to man, I think we may say with a satisfactory measure of confidence, "Floreat *Paradoxornis heudei*."

IX.—*Notes on Birds observed in the Bermuda Islands during the Winter of* 1912–1913. By JOHN NOBLE KENNEDY, R.N.

THE Bermudas are a curiously elongated group of islands situated in the Atlantic about 600 miles west of Cape Hatteras in the United States, and in latitude 32° 15′ N. and longitude 64° 51′ W. There are no high hills and most of the ground is cultivated, the fertile meadows being interspersed by cedar groves. The climate during the winter months is warm and damp.

The group does not appear to be in one of the direct lines of migration, but the list of "accidental visitors" is a long one. I once visited the lighthouse at Gibb's Hill with a view of gaining some information as to migrants killed at the lantern, but I was told that only one bird had been taken in this manner during the past three years.

The last general list of the birds of these islands, compiled by Captain S. G. Reid, R.E., appeared in the 'Zoologist' for October and November 1877, and, except for an article on the resident land birds published in 1901 [*], the ornithology of the Bermudas appears to have been somewhat neglected of late years.

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[*] "The Resident Land Birds of Bermuda," by Outram Bangs & T. S. Bradlee, 'Auk,' vol. xviii. pp. 249–257.

The following notes are the outcome of observations made by me between 11 November, 1912, and 6 May, 1913, during which period H.M.S. 'Melpomene,' to which ship I then belonged, was being refitted in the Naval Dockyard.

The nomenclature adopted is that of the A.O.U. Check-List of North American Birds, 1910.

Phaëthon americanus O.-Grant.

The Yellow-billed Tropic Bird visits the Bermudas in large numbers for breeding purposes, arriving generally about the end of February or beginning of March *.

The writer's earliest record is February the 23rd, 1913, on which date several of these birds were observed by Lieutenant C. R. Peploe, R.N., at Castle Harbour—a favourite nesting place. On 19 April nests in the cliffs near Whale Bay contained young, but fresh eggs were taken on 22 April.

In obedience to the brooding instinct which possesses them at this time, the birds were in the latter part of April still sitting in nests which had been robbed of their eggs. They did not attempt to fly out of their nest-holes on being approached; and when sticks were put in, the birds would seize them in their bills and hold on so tenaciously that they could be drawn out to the entrance. When brought out they were always so terror-stricken that they lay helpless on the ground for a considerable time before taking wing.

On 26 April a nesting colony of six or seven pairs was discovered in the battlements above the naval rifle-range in Ireland Island. Some of the birds were flying gracefully about over the sea, and every few moments one of them would wing its way up to a nest-hole, flutter for a moment at the entrance as if trying to alight, and then sail out again to its companions. One bird which had successfully alighted and entered its hole was forcibly ejected almost immediately afterwards by the sitting bird, probably its mate, in the most undignified manner.

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* Reid, Zool. 1877, p. 487.

Ardea herodias herodias Linn.

Several examples of the Great Blue Heron were met with from time to time during the winter. It was last seen near Wreck Hill, Somerset, on 25 April, 1913.

It is most interesting to watch one of these herons stalking and capturing its prey. The bird moves about stealthily among the weeds at the margin of some small lake or creek, thrusting its head forward at each step and peering intently into the water. On sighting its prey it sinks slowly downwards and forwards until its breast feathers appear to be submerged in the water, then suddenly its long, sharp beak flashes out, and the bird rises again to a standing position, swallowing its capture and shaking the water from its plumage.

Florida cœrulea (Linn.).

This Heron was encountered once by the writer, a single example being observed on the mud-flats near Wreck Hill, Somerset, on 25 April, 1913.

Ægialitis semipalmata (Bonap.).

Two of these birds were met with in Somerset on 21 December, 1912, and after a long chase along the shore one was secured.

Arenaria interpres morinella (Linn.).

A flock of six Turnstones was observed on the beach at the naval rifle-range in Ireland Island on 28 November, 1912. They were seen again a week later.

Numenius hudsonicus Lath.

One example of the Hudsonian Curlew was observed in Somerset on 21 December, 1912, but it was so wary that the writer could not get within shooting distance of it.

Numenius borealis (Forst.).

One example of the Eskimo Curlew was seen in Ireland Island on 20 January, 1913, and small companies of Curlews, which were probably of this species, were several times observed flying over Ireland Island during December 1912 and January 1913.

The writer's records of this and the preceding species do not confirm Captain Reid's statement that both species of Curlew remain but a short time after their arrival in August or September.

Colinus virginianus virginianus (Linn.).

The Bob-white was frequently met with in small companies of four or five during the winter, and on 19 January one large covey of twenty birds was flushed among the sand-dunes at Warwick Camp.

Messrs. Bangs and Bradlee, writing in 1901, state that this species was "not abundant," but now it is a common bird in these islands.

Several Bermuda specimens have been compared with a large series of skins in the British Museum, from the nearest parts of the mainland, but no appreciable differences can be discerned between them.

Chæmepelia passerina bermudiana (Bangs & Bradlee).

The Ground-Dove is one of the commonest birds of the Bermudas.

A nest containing young birds about a week old was found on 4 May, twelve feet from the ground on the branch of a cedar. The mother bird sat very closely until the writer's hand was within a few inches of her, when she fell to the ground like a stone and "shammed wounded" by fluttering about in an apparently helpless manner.

Pandion haliaëtus carolinensis (Gmel.).

One fine male Osprey was seen by the writer near Gibb's Hill on 22 April, 1913.

Ceryle alcyon (Linn.).

The Belted Kingfisher was met with frequently during the winter.

It seems quite probable that some of these birds may breed in the Bermudas, for a pair was observed performing a kind of amatory flight on 20 April. They had not yet gone on 25 April, when one was seen in Somerset, but between that date and 7 May, when H.M.S. 'Melpomene' sailed for England, the writer had not another opportunity of visiting the mangrove swamps which they haunt.

It may be worthy of note that this Kingfisher was more often observed fishing in salt- than in fresh-water.

Chordeiles virginianus virginianus (Gmel.).

Two of these Goatsuckers passed over the marsh below Government House on the evening of 6 April; and on the following day two more were seen hawking for moths over the trees in Somerset.

Corvus brachyrhyncos brachyrhyncos Brehm.

Messrs. Bangs and Bradlee considered the species of the Bermuda Crow doubtful. One skin obtained in Bermuda in February, 1875, by Captain H. Edmund and now in the British Museum, has been compared with a series of specimens of *C. b. brachyrhyncos* from the mainland, and it was noticed that it had less violet on the feathers of the back. The wing measurement of the Bermuda bird is 11·9 in., the average wing of *C. b. brachyrhyncos* measuring 13·0 in. to 13·5 in.* Unfortunately, however, this was the only Bermuda specimen which was available for examination, and possibly it may have been an immature bird.

On 19 April two of these crows were encountered in a wood near Gibb's Hill. They flew around, calling loudly, and their behaviour led the writer to think that they must have a nest near by. After a short search it was discovered, apparently half built, in a tall and slender tree.

Cardinalis cardinalis cardinalis (Linn.).

The Cardinal is exceedingly abundant in the Bermudas.

The birds began to pair about 8 March, and a nest containing fresh eggs was found on 19 April.

Passer domesticus (Linn.).

The European House Sparrow, originally introduced in 1874, is now exceedingly plentiful and is apparently increasing in numbers.

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* Baird, B. N. A. 1858, p. 566.

Passerculus sandvichensis savanna (Wils.).

One male example of the Savannah Sparrow was shot on Boaz on 8 March, 1913. It was in company with a number of House Sparrows.

Captain Reid, writing in 1877, records two instances only of its occurrence.

Carduelis carduelis bermudiana Kennedy.

This bird has been described by the writer as a new subspecies *.

Its habits are similar to those of *C. carduelis*.

It seems probable that this bird was originally introduced by man at some unknown date. Captain Reid recorded one seen near Harrington Sound in April, 1875, this being apparently the only example observed between March, 1874 and June, 1875. It is now abundant in the Bermudas, and small companies were frequently met with during the winter months.

The birds were beginning to pair on 4 March, but on 10 March flocks were still to be seen. Fully fledged young were being fed by their parents on 5 May.

Vireo griseus bermudianus Bangs & Bradlee.

The Bermuda Vireo is now exceedingly numerous.

A nest found on 25 April, 1913, contained young birds about a week old, whilst in another, seen on 28 April, there were three fresh eggs.

Mniotilta varia (Linn.).

The Black and White Warbler was not at all common during the winter 1912–1913.

One female was shot in Ireland Island on 10 March, 1913, and a male in fine plumage at Fairylands on 23 April. Its call-note was heard several times during April in the woods around Hamilton.

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* Bull. B. O. C. vol. xxxiii. 1913, p. 33.

Compsothlypis americana americana (Linn.).

One male example of the Parula Warbler was shot at Fairylands on 18 April, 1913. This bird had been observed a few days before by Mr. T. S. Bradlee of Boston, who very kindly allowed the writer to secure it for his collection.

Captain Reid records four occurrences, the last being in 1874.

Dumetella carolinensis (Linn.).

The Catbird is very common in the Bermudas.

Nests with fresh eggs were found on 27 April.

Merula migratoria (Linn.).

A flock of about twenty American Robins was seen at Warwick Camp on 19 January, 1913. The birds were very shy and could not be closely approached.

This species is uncommon in these islands.

Sialia sialis sialis (Linn.).

This handsome species is very abundant, and flocks of from twelve to twenty birds were frequently seen during the winter.

Nidification commenced about 10 March, and fully-fledged young were seen on 4 May.

On 12 March the writer shot and slightly wounded a male Bluebird, which was accompanied by another male and a female. These, instead of flying away at the report of the gun, fluttered over their wounded companion and, alighting on the ground, pecked at him with their bills, evidently urging him to rise. With an effort he flew up into a neighbouring tree, only to fall to the ground once more, when he was quickly captured and put out of pain.

On another occasion, some two months later, a hen sparrow had been shot in a field, and whilst the writer was walking out to pick it up a male Bluebird alighted beside it. It faced the writer fearlessly, looking first at him and then at the dead sparrow in the intent fashion which is peculiar to this species, and not until the writer was within a few feet of it did it fly off into the woods.

X.—*Notes on a Collection of Birds from Sierra Leone.*

By Major H. J. Kelsall, R.A., M.B.O.U.

(Plate X. and Text-figures 1 & 2.)

The collection of skins and the field-notes are the result of sixteen months' collecting and careful observation. Altogether I spent two periods, of twelve months each, in Sierra Leone, from August 1910 to August 1911, and from February 1912 to February 1913. Owing to press of other work I was unable to do any collecting until the last four months of my first tour, and as I could not obtain the assistance of a native collector, and therefore had to do all the skinning myself, the collection is not so complete as I would have wished. It is, however, I believe, the largest collection, both in number of species and specimens, that has yet been brought from the Colony, and comprises 941 specimens embracing 215 species. I am indebted to Dr. W. C. E. Bower, of the West African Medical Service, for 38 skins obtained in the Karine District, a portion of the Protectorate which I was myself unable to visit.

I am deeply indebted to Mr. W. R. Ogilvie-Grant, Mr. C. Chubb, and the assistants in the Bird Gallery of the Natural History Museum for the help they so kindly gave me in working out my collection; also to Mr. W. L. Sclater and Mr. D. A. Bannerman.

My observations were chiefly carried out in the Peninsula (see Geographical Notes). In April 1912 I spent ten days travelling in the Ribbi and Bumpe Chiefdoms, 30 to 40 miles south-east of Freetown, and visited a place called Yandu, where, at low tide, vast muddy flats are exposed, which I found to be the resort of innumerable wading birds. On these flats I saw large flocks of Flamingoes, Pelicans, Herons of half-a-dozen different species, Spoonbills, Stilts, Whimbrel, Plover, and Sandpipers as well as Gulls and Terns, and, on a little island near the shore, a small colony of White Ibises. Owing to the soft mud and the want of cover, it was very difficult to approach near enough to obtain specimens.

The swampy creek running up to the village was the haunt of numbers of Night Herons, Cormorants, and Darters, as well as Kingfishers of several species.

In September 1912 Dr. Simpson, of the Entomological Research Committee for Tropical Africa, invited me to accompany him on a tour through the central and southern portions of the Protectorate, during which I obtained a considerable number of species which I had not observed in the Peninsula itself. We also, on this trip, made a good collection of bird parasites, which have been handed over to Mr. Marshall, Secretary of the Entomological Research Committee, in order that when an opportunity occurs they may be worked out.

The following is an itinerary of this tour.

1912.		
Sept.	6th.	Joined Dr. Simpson at Bo about 120 m. E.S.E. of Freetown.
	7th.	Dumballa.
	8th.	Jarra.
	9th.	Gorahun.
	11th.	Kamboma.
	12th.	Tungea.
	13th.	Biwama.
	14th.	Mongheri.
	15th.	Do.
	16th.	Yele.
	17th.	Mayeppa.
	18th.	Matotaka.
	19th.	Makump.
	20th.	Ma Yosso.
	21st.	Kamerabai.
	22nd.	Yonnibanna.
	23rd.	Bambuama.
	24th.	Moyamba.
	25th.	Do.
	26th.	Do.
	27th.	Sembehun.
	28th.	Yorké (by boat).
	29th.	Bonthe do.
	30th.	Do.
Oct.	1st.	Muchaj (by boat).
	2nd.	Kattin do.
	3rd.	Subu do.
	4th.	Torma do.
	5th.	Demabola do.
	6th.	Mafwe do.
	7th.	Do.
	8th.	Mattru (by road).
	9th.	Gbangbama.
	10th.	Do.
	11th.	Bambetuk.
	12th.	Sembehun.
	13th.	Senahu.
	14th.	Rotifunk.
	15th.	Robarri.
	16th.	Rokelle.
	17th.	Ropat.
	18th.	Songo Town.
	19th.	Waterloo.
	20th.	Do.
	21st.	Banana Islands.
	22nd.	Do.
	23rd.	York.
	24th.	Freetown.

Our daily routine was to get up at daylight, or a little before, and while our loads were being packed up, have a light breakfast. We started off about 6.30 and tramped to our next stopping place—our marches varying from ten to fifteen or even eighteen miles.

We collected as we went along, and on arrival at our destination, usually between 12 noon and 2 P.M., had lunch, and then spent the afternoon and evening preparing specimens and writing up notes. This often kept me busy till midnight or later. Fortunately, except on the rivers in the Sherbro District, we were seldom troubled by mosquitoes, but in that district they swarmed, particularly at Kattin and Torma, where they were in myriads and made bird-skinning by lamplight a foretaste of the infernal regions.

Geographical and Topographical Notes.

The Colony and Protectorate of Sierra Leone lie between 7° and 10° N. latitude and between about 10° 30′ and 13° 30′ W. longitude, and comprise an area of about 23,000 sq. miles.

The Colony proper consists of the Sierra Leone Peninsula, Sherbro Island, and Turner's Peninsula (see Pl. X.).

The Sierra Leone Peninsula is mountainous; the hills run to a height of from 2000 to 3000 feet and are composed chiefly of syenite with outcrops of laterite; they are clothed, from about the 800-foot contour upwards, with "Rain Forest," the trees reaching to a height of 100 feet and over. The lower slopes and the narrow strips of level ground between the sea and the base of the hills have all been cleared from time to time for cultivation, and are partly under crops (chiefly cassava) and partly covered with low dense scrub and elephant grass.

Sherbro Island and Turner's Peninsula are low and swampy, as is also a considerable portion of the southern and south-western parts of the Protectorate.

The greater part of the central, western, and southern portions of the Protectorate consists of undulating country, with no considerable elevations, and covered, for the most part, with thick scrubby forest.

"Savanah Forest," *i. e.* "open woodlands, the trees standing at a distance from each other, while the intervening space is covered with grass and other plants, occurs in N. Ronietta, N. Panguma, N. Konno, Koinadugu, and Karine; the height of this forest rarely exceeds 30 feet, except in the case of a few trees."

According to Mr. C. E. Lane-Poole, Conservator of Forests for Sierra Leone *: "The Rain Forests at one time must have covered the whole country, they are now confined to Ronietta Railway and Sherbro Districts, to part of Panguma and Konno, and to all the mountain ranges in the country . . . . . . They are most generally met with on the top of a mountain range, the natives having cultivated the lower and not having yet reached the upper slopes. Or, again, they are preserved owing to the superstitious belief that they are inhabited by a benign or evil spirit. A piece of forest is preserved around each town, a part of which is used as a 'Porro Bush'." In the north-eastern portion of the Protectorate the country becomes more mountainous.

The year is divided into two seasons, a wet and a dry. The wet season begins in May and continues till October, the remainder of the year being the dry season. The rainfall at Freetown is from 160 to 180 inches annually, July and August being the wettest months.

The breeding-season for the majority of birds seems to be during the rains.

The natives appear to have distinctive names for a good many birds. I have given a few that I was able to ascertain, and which I believe I have reproduced more or less correctly.

Some of the natives have a belief that if they eat the flesh of certain birds it will cause disease, or some misfortune to fall upon them. One of my "boys" told me that his family could not eat "*turacu*." Another, that he could not eat *Bycanistes cylindricus*, and that if he did his flesh would turn white. I was unable to ascertain if this belief was general and whether the different tribes each have some particular bird with regard to which they are superstitious.

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* Report on the Forests of Sierra Leone, 1911.

A sketch-map (Plate X.) is given showing the area collected over. The positions of the towns and rivers are only approximately correct as there is no accurate survey of the country.

The nomenclature is that of Reichenow's 'Vögel Afrikas,' the classification that of Sharpe's Hand-list reversed, *i. e.* with the "highest forms" first.

Field Notes.

Family CORVIDÆ.

Corvus scapulatus.

Widely distributed, but not usually plentiful. Generally seen in pairs or singly, and sometimes three or four together. On one occasion, about twenty miles north of Bo, I saw a flock of fifteen or sixteen.

Picathartes gymnocephalus.

The only specimen in my collection was obtained by Mr. Guy Aylmer, Assist. Conservator of Forests, in the mountain-forest about twenty miles south of Freetown. It does not appear to have been previously recorded from farther north than the Gold Coast. Mr. Aylmer told me that his men did not seem to know it.

Family DICRURIDÆ.

Dicrurus atripennis.

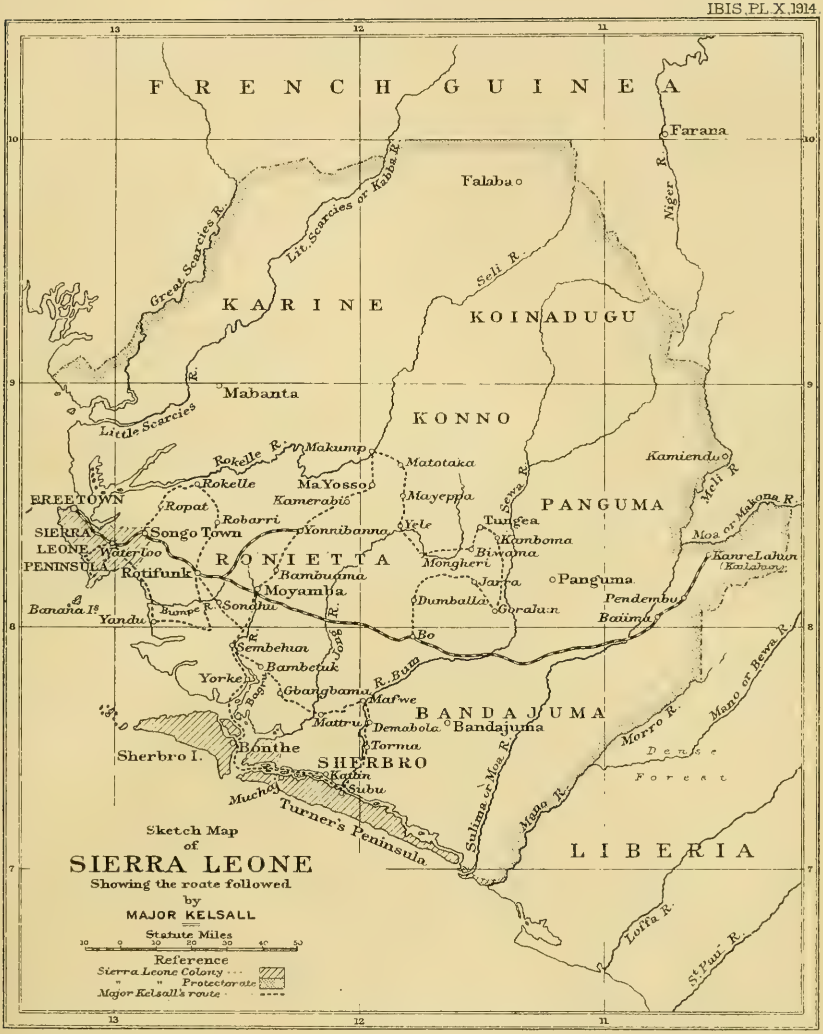
A forest dweller. Mendi name, "jakoi," probably onomatopœic, as it resembles one of the commonest notes of the bird.

Dicrurus assimilis atactus.

Dicrurus afer A. Licht.; Reichenow, Vög. Afr. ii. 1903, p. 646.

Dicrurus assimilis atactus Oberh.; Bannerman, Ibis, 1912, p. 230.

A forest dweller. Is a somewhat noisy bird and has some good notes.


FRENCH GUINEA
Farana
Niger R.
Falaba
Lit. Scarcies or Kabba R.
Great Scarcies R.
KARINE
Seli R.
KOINADUGU
Mabanta
Little Scarcies R.
KONNO
Rokelle R.
Makump
Matotaka
Kamiendu
Meli R.
Rokelle
Ma Yosso
FREETOWN
Kamerabio
Mayeppa
Sewa R.
PANGUMA
Ropat
Robarri
Tungea
Moa or Makona R.
SIERRA LEONE PENINSULA
Songo Town
Yonnibanna
Yele
Kamboma
Moa
Kanre Lahun (Kailahun)
Waterloo
RONIETTA
Biwama
Rotifunk
Bambuama
Mongheri
Jarra
Panguma
Moyamba
Dumballa
Goraluin
Pendembu
Banana Is.
Sonohu
Bumpe R.
Yandu
Jong R.
Bo
Baiima
Sembehun
Bambetuk
R. Bum
Mano or Bewa R.
Yorke
Bagru R.
Gbangbama
Mafwe
BANDAJUMA
Morro R.
Mattru
Demabola
Bandajuma
Bonthe
Torma
Dense Forest
Sherbro I.
SHERBRO
Kattin
Subu
Mano R.
Mucha
Turner's Peninsula
Sulima or Moa R.
LIBERIA
Loffa R.
St Paul R.
13
12
11
10
9
8
7
Sketch Map of SIERRA LEONE Showing the route followed by MAJOR KELSALL
Statute Miles
10 0 10 20 30 40 50
Reference
Sierra Leone Colony
" " Protectorate
Major Kelsall's route

Dicrurus coracinus.

Specimen No. 322 may be referable to this species.

Family Oriolidæ.

Oriolus auratus.

Two specimens, one immature, were obtained by Dr. Bower in the Karine District. Capt. Long, R.A.M.C., also showed me a specimen which he had obtained in the same district. I never saw this bird myself.

Oriolus rolleti.

Mendi name, "dogbori-bakwi" = "bush-talker."

Family Sturnidæ.

Pholidauges leucogaster.

This handsome Starling is common during most of the year about Freetown. In May and June it is found in small flocks, especially at sundown, but it appears to disperse for breeding purposes in July and August. In October, again, it is seen going about in flocks of from ten to forty individuals. Its note is a single sharp staccato whistle.

Irides pale yellow ; bill black.

Lamprocolius splendidus.

Not common. I obtained only one specimen, one of three or four seen at Yandu in the Bumpe Chiefdom, though I believe I saw it occasionally elsewhere.

Family Ploceidæ.

Lagonosticta polionota.

This species occurs only in pairs, and does not appear to mingle with the flocks of other small Ploceidæ, and is most frequently met with in open bush or grass country.

Lagonosticta senegala.

Very plentiful and tame. It is often to be seen in the streets of Freetown helping itself to the rice exposed for sale in the native shops. In gardens it will come and pick up crumbs within a few feet of where one is sitting.

Estrilda melpoda.

Observed near Freetown only during the rainy season. In the evenings it may be seen in flocks of from twenty to fifty or more in the tall grass, in company with *Estrilda occidentalis, Spermestes cucullatus,* &c.

Hypargos schlegeli.

I only saw one pair, which I obtained near Freetown on the 10th of August, 1912.

Malimbus malimbicus.

Malimbus nitens.

These two species, so far as my observations go, occur only in forest country, and only singly or in pairs.

Coliuspasser macroura.

Lives in open grassy country. Common everywhere in suitable localities. Is in full breeding-plumage in August.

Vidua serena.

Appears to be more or less migratory. I only saw it about Freetown during the rains. Seven or eight males are sometimes seen in a flock.

Nigrita bicolor.

Mendi name, "bundujukuli."

Irides dull red.

Nigrita emiliæ.

Irides hazel. These two species frequent low scrubby bush and are seen singly or in pairs.

Pyromelana flammiceps.

Mendi name, "puli."

Inhabits dry grassy country. Assumes its breeding-plumage in August.

Pyromelana afra.

I only noticed this species amongst the long reeds in swampy districts, especially in the Sherbro District.

Pyrenestes coccineus.

Reichenow (Vög. Afr. iii. p. 106) makes *P. coccineus* (Cass.) a synonym of *P. ostrinus* (Vieill.), but there appears to be no doubt that the two species are distinct. In *P. coccineus* both males and females are brown, while in *P. ostrinus* the males are black. Bannerman ('Ibis,' 1912, p. 232) identifies two female specimens of *Pyrenestes* from Sierra Leone as *P. ostrinus*, but they are more probably *P. coccineus*. So far as I can see, it is impossible to distinguish the females of the two species, but up till now, I believe, *P. ostrinus* has not been recorded from Sierra Leone, and is a more southern bird.

Hyphantornis cucullatus.

Mendi name, "bakwi" = "talk plenty."

Appears to be common everywhere throughout the Colony and Protectorate, especially in the neighbourhood of towns and villages. About Freetown it is particularly fond of cocoanut trees, the branches of which are often completely denuded of foliage to construct the nests which hang in dozens on the branches.

The huge silk-cotton trees (*Eriodendron* sp.), which are found in or near every town, are also favourite nesting-places of these birds, colonies of thousands building in them.

Hyphanturgus brachypterus.

Does not occur in large colonies like the preceding species, but builds its nests singly or two or three together.

Irides pale ochreous.

Melanopteryx castaneofusca.

Shelley gives the colour of the iris as brown, whereas it is bright chrome-yellow, according to my observations.

Spermospiza hæmatina.

A very shy bird and rarely seen. It lives in dense thickets which it seldom leaves.

Family FRINGILLIDÆ.

Serinus hartlaubi.

This is a very common cage-bird in Freetown, though I only once obtained wild specimens.

Family MOTACILLIDÆ.

Anthus leucophrys sordidus.

Very common about Freetown in the open grassy plains. Its habits are similar to those of the English Meadow-Pipit.

Macronyx croceus.

Found in open grassy plains. It has a habit of rising some feet in the air and hovering like a Sky-Lark. It has several pleasant notes, which it sings when perched on a wall or rock, or when flying.

Motacilla flava.

Common in the dry season, from October to April.

Motacilla vidua.

During the first week in October 1912 there were a number of these birds about, and I saw them occasionally at other times.

Family NECTARINIIDÆ.

Cinnyris splendidus.

I think this species must be, to some extent, migratory, as it was more plentiful from April till about August than during the remainder of the year.

The nest is an oval structure about five inches long, composed of fine grass with the entrance at one side, sheltered by an overhanging eave. One I found suspended from a branch of a locust tree, about fifteen feet from the ground; another was hanging from the end of a short piece of creeper under the verandah of a native hut.

In Bannerman's paper on the Willoughby Lowe collection from West Africa ('Ibis,' 1912, p. 225), *Chalcomitra acik* (Antin.) is recorded as occurring in Sierra Leone and

St. Paul de Loanda. *C. acik* is, however, a north-east African species, and on examining the specimens which have been so identified, I find that those from Sierra Leone (two females) are, almost undoubtedly, referable to *Cinnyris splendidus*, which is common in Sierra Leone, while *C. acik* is very unlikely to occur there, and even its western representative, *C. senegalensis*, was never seen by me during two years' residence.

The specimens from St. Paul de Loanda are not *C. acik*, but *Cinnyris gutturalis*, the south-west African form of this group.

Cinnyris cupreus.

This species, like *C. splendidus*, is more numerous about Freetown during the rainy season than during the dry. In June and July I frequently saw four or five males going about together. Before June I scarcely ever saw a male in full plumage.

Cinnyris venustus.

The pectoral plumes of this species vary from greenish yellow with the barest trace of orange, to bright yellow strongly tinged with orange.

Anthreptes collaris hypodilus.

Reichenow appears to rightly make *A. zambeziana* (Shelley) a synonym of this species. Two of my specimens from Sierra Leone agree almost exactly with the type of *A. zambeziana* in the British Museum in having a little metallic-golden green on the margins of the secondaries.

Anthreptes gabonicus.

This small grey Sunbird is scarce. I only met with it twice, on both occasions not far from the sea-shore.

Family PARIDÆ.

Parus niger leucomelas.

One specimen was collected by Dr. Bower in the Karine District.

Family LANIIDÆ.

Lanius humeralis smithi.

A common and conspicuous bird in open bush country and cultivated land and gardens. Fond of perching on telegraph-wires or on a bare branch of a tree, whence it makes short flights in pursuit of insects, returning again to its perch. The breeding-season is in May and June.

Chlorophoneus sulphureopectus.

Not a common bird. I only saw or heard one occasionally. It has an easily distinguishable call consisting of four notes. It is shy and not easy of approach.

Iris dark brown; bill black; legs and feet pale slate.

Chlorophoneus multicolor and C. preussi.

There appears to have been some confusion with regard to this species. Reichenow (Vög. Afr. ii. 1903, p. 565) describes it as having "the forehead behind the black band, eyebrows and temporal streak white," and distinguishes *C. preussi* (Neum.) from it by the absence of any white between the black band and the grey of the crown. Hartlaub (Syst. Ornith. Westafr. 1857, p. 108) states that the black band is bordered above with white ("supra albo-limbata"). Neumann, in his description of this species (J. f. O. 1899, p. 393), says that the grey of the crown is separated from the black of the brow and sides of the head by a grey-white line, and describes as a new species, *C. preussi,* from "two unfortunately very defective specimens" ("zwei leider recht defecte Exemplare"), which he differentiates from *multicolor* by the absence of a white line between the grey crown and the black of the brow and sides of the head.

Shelley also ('Birds of Africa,' vol. v. pt. ii. p. 419) describes *C. multicolor* as having the black band "margined above with white which extends more or less over the front half of the crown," his description being based on two specimens in his possession.

Now the type specimen of Gray's *Laniarius multicolor* is in the British Museum, and an examination of it and of the plate (Gray, Gen. Bds. i. 1849, pl. lxii.) shows that there is *no white* between the black of the brow and sides of the head and the grey of the crown, the grey cap merely becoming paler at the edges. The plate of *C. preussi* (Neum.) given by Reichenow (Vög. Afr. taf. ix. 1) agrees with that of *L. multicolor* in Gray's 'Genera of Birds,' except that in the latter the grey of the crown is shown of a bluer shade.

The descriptions of *C. multicolor* have therefore all been wrong with regard to this point, and *C. preussi* (Neum.) must become a synonym of *C. multicolor* (Gray).

It does not appear to me to be possible to separate as a species or subspecies the specimens which have a certain amount of white between the grey crown and the black band, as an examination of the small series in the British Museum (the type marked "W. Africa" only, four specimens from the Gold Coast, one from Sierra Leone collected by Robin Kemp, and two from the same colony in my own collection) shews that there is a gradation between the typical form with an almost uniform grey crown without white border, and a form with almost pure white forehead and borders to the grey crown. This variation is probably due to wear.

One of my specimens, which appears to be an immature bird of this species, has the brow and a very faint supercilium pale ochreous slightly flecked with black, the lores, cheeks, and ear-coverts mottled black and grey, while the red of the chin and throat is of an orange tinge and is flecked with black.

This bird appears to be scarce in Sierra Leone as, during a residence of two years in that colony, I only saw the two specimens which I obtained.

Chaunonotus sabinei.

This is a scarce bird, as, during two years, I only saw two or three individuals besides the five specimens (four males and one female) which I obtained. One example was shot in heavy forest, the others in thick scrubby bush. I cannot distinguish between this and the subspecies *C. s. melanoleucus* (Verr.) mentioned by Shelley.

Dryoscopus gambensis.

Common and not at all shy. I often saw this bird in the trees bordering the roads in Freetown. Is most plentiful in open bush country and feeds on insects.

Irides orange-vermilion (in one female that I obtained the irides were dull blue-grey); bill black; legs and feet pale bluish slate.

Not one of my specimens has pure white underparts, the white in all cases being suffused with very pale bluish grey, with, in most cases, a very slight trace of buff on the breast.

Laniarius helenæ.

For description of this new species see Bull. B. O. C. xxxi. 1913, p. 85.

Laniarius turatii.

This species is common in Sierra Leone, but seldom seen, owing to its very retiring habits. It is usually found in the dense creeper-covered tops of thickets and small trees, and ceases calling as soon as one approaches to try and obtain a sight of it, and sneaks away to another thicket. Its call is a very peculiar and unmistakable one. It begins with a kind of harsh creaking note something like the grating of a rusty hinge; this is repeated once or twice and followed by a clear musical note almost exactly like the sound produced by rubbing a wet finger round the edge of a glass finger-bowl.

Irides dark brown; bill black; legs and feet pale blue-grey.

Laniarius leucorhynchus.

I only saw this bird on one or two occasions, and then in low, very dense bush. One specimen which I obtained has the bill dirty white in colour; another has a black bill.

Pomatorhynchus senegalus.

Mendi name, "kinjulu."

Pomatorhynchus ussheri.

Inhabits open scrubby bush and has a short pleasing song, which is heard chiefly at sundown.

Bill black; legs and feet bluish grey.

Nicator chloris.

Mendi name, "bialu." Only seen near Freetown on one or two occasions, but common further inland. Has a very noisy chattering song. Lives in dense bush and forest.

Family PRIONOPIDÆ.

Fraseria prosphora.

Found only in heavy forest.

Family SYLVIIDÆ.

Sylvia simplex.

Fairly common near Freetown during the dry season.

Phylloscopus trochilus.

Specimen No. 865 appears to be of this species. Freetown, 28 Nov. 1912.

Sylvietta hardyi.

Sylviella hardyi Bannerman, Bull. B. O. C. xxix. 1911, p. 23.

Specimen No. 379 appears to belong to this species. Freetown, 9 May, 1912.

Sylvietta flaviventris.

Lives chiefly in the tops of trees and seldom comes down into the undergrowth.

Camaroptera griseiviridis.

A common species living in thick scrubby bush. The call-note is "*chip, chip, chip, chip,*" repeated *ad lib.*

Major Webb, R.A.M.C., found malarial parasites in a sample of the blood of one of these birds which I gave him.

Camaroptera chloronota.

Specimen No. 641 appears to be referable to this species.

Camaroptera superciliaris.

Two specimens only obtained:—No. 700 near Yonnibanna, 23. ix. 11; No. 771 near Mafwe, 8. x. 12.

Eremomela pusilla.

Lives in the tops of trees and seldom comes down to the undergrowth.

Irides greenish grey; legs pale greenish horn; feet dull yellow.

Pholidornis rushiæ ussheri.

Pholidornis rushiæ ussheri Hartert, J. f. O. 1907, p. 621.

I only obtained three specimens of this beautiful little Flower-pecker. The first occasion was at Yele, when I brought down two from the top of a tall bare tree, and a week later I obtained a single specimen near Yonnibanna.

Stiphrornis erythrothorax.

A single pair obtained in the mountain-forest 10 miles south of Freetown.

Hylia prasina.

Lives in fairly dense bush. Never very common.

Irides dark brown; bill black; legs and feet pale greenish slate.

Cisticola cisticola uropygialis.

Of five specimens which appear to be referable to this species, one only is typical. The remaining four resemble *C. terrestris* Smith, in having dark tail-feathers. None of my specimens has any trace of a brownish band across the tail-feathers, such as usually occurs in typical *Cisticola cisticola*.

C. brachyptera Sharpe ('Ibis,' 1870, p. 476) is usually considered a synonym of *C. rufa* Fras., but appears to be sufficiently distinguished by its duskier coloration and generally smaller size.

The various species of this group are plentiful in the open grassy plains and low scrub. Some of them (*Melocichla mentalis* and *C. lateralis*, at any rate) have quite a pleasing little song, uttered when perched on the top of a tall grass stem or low bush.

Melocichla mentalis.

A bird of the open scrub and grass lands.

Family TURDIDÆ.

Turdus pelios.

Common in the gardens and scrub on the outskirts of Freetown. It has a powerful song, some of its notes being not unlike those of an English Song-Thrush. Its habits are thrush-like, and it is frequently seen scratching about amongst dead leaves in roadside ditches for snails.

Aëdon luscinia.

A single specimen obtained near Freetown on 19 March, 1912.

Cossypha verticalis.

This handsome bird is more often heard than seen. It has a fine song which it utters at sundown from the midst of the densest thickets, and it is only during its short flights from one thicket to another that one catches sight of it.

Irides dark brown; bill black; legs and feet dull flesh-colour.

Cossypha cyanocampter.

This is even more retiring than the preceding. I never saw it in the open, and it was only by patient waiting in the heart of a dense thicket, sometimes for half an hour or more, that I was able to catch a glimpse of it. It has a very distinctive song, commencing usually with a long drawn out note uttered at intervals and succeeded by broken snatches of melody. By sitting absolutely still and imitating these notes, it was possible to attract this bird to within a few yards, but even then it was difficult to see on account of the density of the undergrowth and the impenetrable gloom of the thickets, and at the slightest movement it takes alarm and vanishes.

It appears to be somewhat local in its distribution; I only once obtained it in the neighbourhood of Freetown, though at Yonnibanna, Rotifunk, and one or two other localities inland I heard it pretty frequently.

Alethe castanonota.

A forest bird and apparently rare. I only obtained one specimen.

Pratincola rubetra.

A dry season visitant, seen up to April the 22nd.

Family Timeliidæ.

Hypergerus atriceps.

This handsome bird is very fond of palm trees, hunting round the base of the branches for insects. It has a loud, not unmelodious song which may be represented by the syllables "*whee-oo, whe-oo, whe-oo,*" the second syllable half a tone lower than the first, and the second and third repetitions commencing about two tones lower than the first. This call is repeated over and over again.

About Freetown it was scarce during the dry weather, but common during the rains, being heard and seen in gardens and plantations, even in the town.

Irides red-brown ; bill black.

Crateropus platycircus.

A single specimen was collected by Dr. Bower in the Karine District.

Macrosphenus zenkeri.

This species may easily be mistaken for one of the Camaropteras; in fact, several specimens in the Boyd Alexander collection in the British Museum are so labelled. It is found in heavy forest.

Turdinus gularis.

Found in heavy forest, and usually seen hunting about in the undergrowth and debris on or near the ground.

Amaurocichla kempi.

Amaurocichla kempi Sharpe, Bull. B. O. C. xv. 1905, p. 38.

I only obtained two specimens of this bird, one in the hill forest about six miles south of Freetown, the other near Mafwe on the Bum River. Both were in low dense undergrowth.

Family Pycnonotidæ.

Criniger barbatus.

Criniger verreauxi.

Phyllastrephus icterinus.

These three species live in the heavier forest. They are never met with in the open bush.

Phyllastrephus simplex.

Found chiefly in dense low bush.

Andropadus gracilis.

This species inhabits dense low bush and has a short melodious song.

Bill dark horn ; legs and feet bluish slate.

Andropadus latirostris.

A forest bird.

Andropadus virens.

Mendi name, "invue." Inhabits dense low bush, especially in the neighbourhood of streams. Numbers of these, as well as of *Pycnonotus barbatus* and *A. minor*, may be seen bathing in shallow pools in the evening.

Andropadus griseoviridis.

Verreaux's description (J. f. O. 1855, p. 105) of *A. indicator* applies to the specimens with buff vents ("crisso cinereo-isabellino") from Kamerun and Uganda, while Temminck's *griseoviridis* (Hartlaub, Orn. Westafr. 1857, pp. 84, 85) applies to the greyer form from Sierra Leone and Liberia. This species is found chiefly in the heavier forest or in the large trees along the banks of rivers. Its call is easily recognizable.

Andropadus serinus.

Xenocichla canicapilla.

Xenocichla syndactyla.

These three species are found in the forest.

Pycnonotus barbatus.

Very common, especially about gardens, cultivated ground, and low open bush. It goes about frequently in parties of three. When perched it has a habit of raising the feathers of the forehead and crown so as to present the appearance of a slight crest.

Irides reddish brown; bill, legs, and feet black.

Family CAMPOPHAGIDÆ.

Coracina azurea.

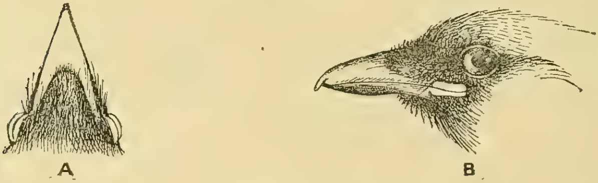
I only saw this species on rare occasions.

Campophaga phœnicea. (Text-fig. 1.)

Appears to be migratory, at any rate partially,. I seldom saw it during the dry weather, but during the rains it was fairly common.

Irides dark brown; bill, legs, and feet black.

Text-fig. 1.



Campophaga phœnicea.

A. Bill seen from below.
B. Head showing the fleshy excrescence at the gape.

The male has a curious fleshy excrescence of a pink colour at the gape which is not apparent in the dried skin.

Campophaga quiscalina.

Rare.

Family MUSCICAPIDÆ.

Stizorhina finschi.

Two specimens were obtained in dense bush near Mayeppa. I was attracted by a call I did not know, and following it up, I obtained one bird, and the following day got a second.

Hyliota flavigastra.

The only specimen in my collection was obtained by Dr. Bower in the Karine District.

Diaphorophyia hormophora.

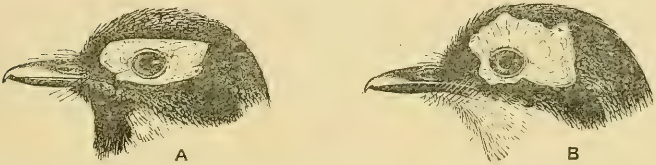
I never saw this bird except in dense bush or forest.

Irides dark brown; bill black; legs and feet purplish slate.

There is a narrow white superciliary streak concealed by the eye-wattle, which is of a purplish-black colour (see text-fig. 2 B).

Length in flesh, 4 inches.

Text-fig. 2.



Heads of (A) *Diaphorophyia blissetti* and (B) *D. hormophora* showing the eye-wattles.

Diaphorophyia blissetti.

This species, like the preceding, inhabits dense bush and appears to be more or less local. I never saw it in the Peninsula and only in one or two places in the Protectorate. Eye-wattle bright turquoise-blue (see text-fig. 2 A).

Platysteira cyanea.

Resident and common, especially about orchards and gardens.

Bill, legs, and feet black. The scarlet wattle over the eye is about ·2 of an inch wide.

A nest which I found on the 2nd of May was placed on a low outer branch of a small coffee tree, four feet from the ground, in a garden within ten yards of a native house. It was constructed of coarse and fine grass fibre and leaves, lined with fine grass and with some pieces of lichen attached on the outside. Outside diameter $2\frac{1}{2}$ in.; inside $1\frac{3}{4}$ by $\frac{7}{8}$ in. deep. Eggs two: size 19 by 14 mm.

Bias musicus.

This handsome Crested Flycatcher is not very common. The call of the male is very distinctive and may be represented by the syllables "*tit-tiu, tit-tiu.*" The female has only a harsh "*churr.*" A nest which I saw was placed on a bare branch of a locust tree, about twenty feet from the ground, and contained two young.

Irides bright yellow; bill dark horn; legs and feet pale greenish yellow. Flight undulating. The young are chestnut in colour like the female, the young males assuming the black plumage of the adult male at the first autumn moult.

Artomyias ussheri.

I only once saw this species, near Rotifunk. Several individuals were flying about a tall bare tree, and I obtained two specimens.

Tchitrea nigriceps.

Frequents chiefly dense bush and forest, but is also sometimes found in orchards and gardens.

A nest with three eggs (now in the British Museum) which I found on the 1st of May, was in a fork of a bare branch of an orange tree, about six feet from the ground, a few yards from a native house. The nest was composed of fine grass, lined with fine black fibres, and plastered outside with spiders' web and egg-cases.

The song is a loud clear whistle of several notes. Breeding males do not always have the elongated tail-feathers.

One specimen (No. 850) appears to be a hybrid.

Irides very dark brown; bill, light smalt blue in the adult, blackish in the young. The blue fades and the bill turns black very soon after death. Inside of the mouth bright gamboge.

Elminia longicauda.

Resident and common everywhere about Freetown. The dead bird gives but little idea of the beauty of this species in life. It frequents gardens and low scrubby bush and flits about in a jerky manner from branch to branch, in pursuit of insects, spreading the tail out fan-wise.

It breeds in April and May. The nest is usually placed in a low branch of a Mango tree. One nest which I observed, was commenced on the 26th of April, and on the 29th contained two eggs. It was composed of fine grass fibres with silk cotton, spiders' web, some small feathers and pieces of lichen outside. The lining was of fine grass fibres. Outside measurements $3\frac{1}{2}$ by $2\frac{1}{2}$ in.; inside 2 by $1\frac{3}{4}$ by $1\frac{1}{4}$ in. deep.

Irides dark brown; bill, legs, and feet black.

Family HIRUNDINIDÆ.

Hirundo rustica.

First seen on the 7th of September.

Hirundo gordoni.

Mendi name (for Swallow), "bandévi" = "fly plenty."

Migratory. First noticed near Freetown at the end of March, it is fairly plentiful throughout the rainy season.

Psalidoprocne obscura.

Resident and plentiful, especially in the neighbourhood of streams. The female appears to have a green gloss instead of the blue gloss of the males, but I am uncertain if this is a constant characteristic.

Family PICIDÆ.

Mesopicus poicephalus.

Not very common. Partial to palm trees.

Mesopicus pyrrhogaster.

Seldom seen except in heavy forest. The tapping sound made by this bird on dead trees when in search of insects can be heard at a long distance, and it is difficult to understand how the bird can attain the rapidity of movement of the head necessary to produce the castanet-like sound.

Dendromus caroli.

Only seen in heavy forest, and there not frequently. The green colour about the head of this bird appears to be acquired, in part at any rate, from green lichen or fungus on the trees with which it comes in contact when searching for food. If rubbed with a damp cloth some of the stain comes off.

Dendromus maculosus.
Dendromus nivosus.
Dendropicos lafresnayi.
Dendropicos lugubris.

These four species are found in fairly open bush country.

Family CAPITONIDÆ.

Lybius bidentatus.

Frequently found in open bush country.

Irides dark brown, orbital patch pale greenish yellow; bill pale yellowish white. The sharply cut-off patch of white on the flanks is very conspicuous in flight.

Lybius rubescens.

There appears to be a gradation in the tone of colouring from *L. vieilloti* of Abyssinia and the White Nile region through the Senegambian form to that from Sierra Leone. The amount of red on the breast gradually increases and the whitish colour of the back decreases in passing from east to west and south. In the West African form the underparts are generally deeper yellow, and the bill is of a smaller average size.

I once or twice heard this bird give a curious call like "*k'ak, k'ak, k'ak, hoo, hoo, hoo,*" the latter syllables having the same ocarina-like tone that most of the Barbets have.

Gymnobucco calvus.

I found this bird in forest only.

Barbatula erythronota.
Barbatula chrysopyga.

Both common. The call of both species is a clear "*hoo-hoo, hoo-hoo,*" that of *B. chrysopyga* being a little higher in pitch.

Barbatula scolopacea.

Mendi name, "bokwomange" = "tap-wood." Not so common by any means as the preceding two species. Its call is quite distinct, being "*chit-chit, chit-chit*" (ad lib.), very similar in quality to that of the Malayan *Calorhamphus hayi,* with none of the musical quality of that of the other Barbets.

Trachylæmus goffini.

I never met with this species in the Peninsula, but obtained it near Songo Town and further east.

Family INDICATORIDÆ.

Indicator sp.?

One specimen was obtained by Dr. Bower in the Karine District.

Family CUCULIDÆ.

Clamator cafer.

I only saw this bird on three or four occasions.

Cuculus clamosus.

This Cuckoo was seldom seen, but was frequently heard calling during May. It was a long time before I identified the note, which is a loud, mournful "*whee-oo, whee-oo, whee-oo,*" as that of this bird.

I notice that Mr. L. M. Seth-Smith ('Ibis,' 1913, p. 504) mentions the call of this bird as having three notes, the last one rising. I never heard more than two notes, the second falling.

Chrysococcyx klaasi.

Chrysococcyx cupreus.

Both migratory, arriving in the neighbourhood of Freetown towards the end of April and remaining throughout the rains. I was never able definitely to distinguish between the calls of these two birds. Both consist of "*whee, whee, whee, whee-oo*" in a minor cadence, and uttered either while perched on the topmost branch of a tree or while flying.

The irides of *C. klaasi* are dark brown and the eyelids yellowish brown, while in *C. cupreus* the eyelids are coral-red and the irides dull crimson.

Chrysococcyx smaragdineus.

I never saw this species, but I was shewn a skin which had been obtained on the extreme eastern border of the Protectorate, where I was told it was of pretty frequent occurrence.

Centropus senegalensis.

Common in the open grassy and low bush-country, and known about Freetown as the "fool-bird," probably because when moulting it can scarcely fly and may almost be knocked over with a stick. The call is a sonorous "*hoo, hoo, hoo.*" The food consists largely of orthopterous insects.

Ceuthmochares flavirostris.

Mendi name, "guru-'ngoni," = "baboon bird."

Common, but comparatively seldom seen, owing to its retiring habits. It delights in dense creeper-covered thickets, in which it creeps about in a squirrel-like manner. It is a noisy bird, having a variety of calls, the most characteristic being a series of notes in a descending chromatic scale commencing slowly and gradually increasing in rapidity. The food consists of caterpillars, locusts, and other insects.

Family MUSOPHAGIDÆ.

Turacus buffoni.

Mendai name, "bule" or "okuma."

Turacus macrorhynchus.

These two species are both common, though the latter is the more numerous in the Peninsula. They are fond of thick bush and heavy forest, and in habits not unlike some of the Cuckoos. They creep about in the dense thickets, usually in small flocks. The call of the two species is, as far as I could make out, identical, and consists of a loud "*qua-qua-qua*" repeated seven or eight times, commencing slowly and gradually becoming more rapid. It can be heard at a distance of at least half a mile.

The birds are known to Europeans and the "creoles" as "cock of the woods" or "woodcock." The Mendis call them "goé," but I believe the name "*turacu*" is also sometimes used by the natives.

By remaining quiet in a patch of bush or forest where I heard these birds, and imitating their call, I was often able to attract them quite close. The effect of the sunlight shining through the carmine of the wings when they are flying is very fine.

Corythæola cristata.

Never observed by me in the Peninsula, but fairly common up country, especially in the strips of heavy forest along the river-banks and in the patches of sacred forest left standing near the towns and villages. It goes about in flocks of four or five to ten or so.

Though a very much larger bird, its call is not nearly so loud as that of the two species of *Turacus,* which occur in the same districts.

Chizærhis africana.

Does not appear to be at all common. I only observed it on one or two occasions, and never in the Peninsula.

Family Cypselidæ.

Chætura sabinei.

Only seen occasionally. One specimen obtained.

Tachornis parvus brachypterus.

Common and, I think, resident all the year round.

Apus affinis.

A colony of these birds nests in the roof of the military hospital at Tower Hill, Freetown. I seldom observed them anywhere else. They disappeared about the end of July and reappeared in November.

Family Caprimulgidæ.

Scotornis climacurus.

Very common. During May, at dusk, they were to be heard all around. The note is a sustained "*churr-rr-rr,*" very similar to the sound made by an alarm clock with a muffled gong, running down. For a long time I believed that a cicada was responsible for this sound, but eventually traced it definitely to this bird. They occasionally, at any rate, perch on trees. One I shot sitting lengthwise on a branch, and another, which I had carefully stalked and located by ear in the top of a small tree but could not see, I shot as it flew out.

They frequent open ground with scattered clumps of bushes and grass. The surface of the open ground near Freetown, where I obtained most of my specimens, was strewn with chunks of laterite of a dark purple hue with which the plumage of the bird assimilates well, rendering them very inconspicuous when sitting on the ground, but I could after a while often "spot" them by the light bars on the scapulars. They are fond of sitting on roads and paths, and often allow one to approach within a yard or two, when they rise and flit away like a huge moth, and settle again 20 or 30 yards farther on. On one occasion one allowed me to get within three feet of it, and I do not think it would have moved had I not stopped to look at it.

Specimens from the same locality vary very much in colour, some being dark brown while others are pale ashy grey. Amongst my specimens the females seem to be lighter coloured than the males.

These birds appear to be subject to filarian parasites. Five of my specimens had worms in the orbits and bony cavities above the palate. They also frequently had parasitic flies (*Hippobosca*) amongst the plumage, but I never obtained more than two specimens from one individual.

Macrodipteryx macrodipterus.

This graceful bird is moderately common. In flight the two elongated primaries float out behind, and look like two small birds chasing the Nightjar.

One specimen in my collection has the eighth, as well as the ninth primary quill in the right wing elongated. All three elongated pinions are of the same length, about 395 mm.

Family Meropidæ.

Melittophagus pusillus.

Migratory. It was fairly common about Freetown at the end of July. I obtained one breeding male near Freetown in March, but saw no other individuals about. On 2 Oct. I saw a number of immature individuals on Turner's Peninsula and obtained several specimens.

Melittophagus gularis.

Never seen near Freetown, but I met with it occasionally up-country between Mayeppa and Matotaka.

Merops persicus.

Migratory. Fairly plentiful about Freetown from May till about the middle of July, when they disappeared.

Merops nubicus.

I only once saw this bird—near Batabi in the Ribbi Chiefdom. One specimen was obtained by Dr. Bower in the Karine District.

Merops albicollis.

Migratory. Arrives at Freetown at the end of October or beginning of November, and remains till about the middle of May. Very common. Irides deep red.

Merops mentalis.

Merops mentalis Cabanis, J. f. O. 1889, p. 78 (Kamerun).

Merops northcotti Sharpe, Bull. B. O. C. vol. x. 1900, p. xlix (Gold Coast—Shelley Coll. Brit. Mus.).

Merops marionis Alexander, Bull. B. O. C. vol. xiii. 1903, p. 33 (Fernando Po).

Merops muelleri mentalis Parrot, Gen. Av. pt. 14, 1911, p. 5.

The above synonymy, with which I concur, is that given by Dr. Carl Parrot (*loc. cit.*), who rightly refers the figure of *Melittophagus mülleri* in Dresser's monograph (Monog. Merop. pl. 30, 1885) to this species. At the same time, however, he refers his own figure (Gen. Av. pt. 14, 1911, pl. fig. 4) to *M. mülleri mülleri* (Cass.), although it was drawn from one of the British Museum specimens of *M. northcotti* Sharpe, which he in the same place rightly makes synonymous with *M. muelleri mentalis*.

I have compared the type of *M. marionis* Alexander with the type of *M. northcotti* Sharpe, and find that they are identical, while O. Neumann has written the following note on the label of Brit. Mus. specimen No. 1904.6.22.27 of *M. marionis* Alex.:—"Compared with the type of *mentalis* Cab. (N. Camerun) and found identical," which establishes the correctness of the above synonymy.

The description of *M. mülleri* in the British Museum Catalogue, vol. xvii. p. 60, applies to *M. mentalis* Cab., as it was drawn up from the specimens afterwards described by Sharpe as *M. northcotti*, but now identified as *M. mentalis*. Reichenow ('Die Vögel Afrikas,' vol. ii. p. 34) makes *M. mentalis* Cab. a synonym of *M. mülleri* (Cass.), and admits *M. northcotti* Sharpe as distinct, whereas the above is the correct synonymy.

It appears probable that Du Chaillu's specimen from the French Congo in Mus. Acad. Philad., from which the original description and figure of *M. mülleri* were taken, is an immature individual of *M. batesiana* Sharpe which is the adult. The type specimen of the latter is from the same region, and a second specimen in the British Museum, differing slightly in colour, is from Kamerun.

I append a full description of *M. batesiana* Sharpe (probably = *M. mülleri*) taken from the type specimen (Brit. Mus. No. 1900.2.24.4. Rio Benito, Fr. Congo—Coll. G. L. Bates) and another specimen (B.M. No. 1903.10.20.149. R. Ja, Kamerun—G. L. Bates), both males.

Description of *Merops batesiana* Sharpe:—

Forehead pale cobalt-blue washed with green (or turquoise blue-green). Crown and nape deeper blue, approaching ultramarine on the nape, the feathers of the nape showing a trace of dull green tips. Shoulders, back, rump, scapulars, and upper wing-coverts rich deep maroon (somewhat paler in Kamerun specimen). Outermost primaries dark brown, more or less washed with chestnut, remaining primaries and secondaries becoming more and more chestnut, the brown being reduced to a mere tip or disappearing altogether. Upper tail-coverts ultramarine-blue. Central pair of rectrices ultramarine-blue with black shafts, and slightly washed with dull green, remainder black with deep blue outer margins. Chin and middle of upper throat crimson with a tinge of vermilion. Breast, abdomen, flanks, and under tail-coverts ultramarine-blue, becoming slightly paler on lower part of abdomen. Wing-lining pale chestnut. Bill black.

Family BUCEROTIDÆ.

Lophoceros semifasciatus.

Pretty common everywhere. Goes about in small flocks of three or four or more. Irides dark brown. Bare orbital patch black. Contents of stomach: ants and other insects and fruit-seeds.

On several occasions I saw another small Hornbill similar in size and general appearance to this species, but brown in colour. I failed, however, to obtain specimens. It was probably *L. camurus* (Cass.) or *L. hartlaubi* (Gould).

Bycanistes cylindricus.

One specimen obtained near Yonnibanna. On the Bumpe River I saw a number of Hornbills of, I believe, this species. They perched on the tops of tall trees, and uttered a shrill cry consisting of one syllable repeated six or seven times, the head being gradually thrown back till the bill pointed upwards.

Family ALCEDINIDÆ.

Ceryle rudis.

Found chiefly along the sea-shore and in tidal inlets. Its food consists entirely or principally of fish.

Alcedo quadribrachys.

Never seen far from water. Is fairly plentiful in mangrove-swamps and along the course of streams.

Corythornis cyanostigma.

This beautiful little Kingfisher is common along swampy creeks and in mangrove-swamps.

Ispidina leucogaster.

Found chiefly in freshwater swamps and near streams.

Halcyon torquatus.

It appears to me to be impossible to separate *H. torquatus forbesi* Sharpe from *H. torquatus* Sw., as birds from the same locality vary very much in the colour of the head, back, and breast-band, according to age and season, and the colour also varies according to the direction of the light—what appears deep blue when looked at with the light in front of the observer, becomes sea-green with the light behind.

Common along the sea-shore and in mangrove-swamps. Feeds partially on insects. I have seen it sitting on the bare branch of a tree and making darts at insects like a Flycatcher.

Halcyon senegalensis.

Very common. Fond of cultivated land and gardens. Feeds almost entirely on insects, especially locusts, and is seldom seen near water.

Halcyon semicæruleus.

Not common in the Peninsula or in any part of the region that I visited. Although I was constantly on the look-out for it, I only succeeded in obtaining three specimens just before leaving for England.

Family Coraciidæ.

Coracias cyanogaster.

Two specimens obtained by Dr. Bower in the Karine District.

Coracias senegalensis.

One specimen collected by Dr. Bower in the Karine District.

Eurystomus gularis.

Fairly common. Is fond of perching on tall, bare trees, flying off from its perch from time to time in pursuit of insects.

Eurystomus afer.

Is not so plentiful as the preceding species.

Family Psittacidæ.

Psittacus timneh.

I never saw these birds near Freetown, but at Bonthe in Sherbro Island they were plentiful.

Agapornis pullarius.

This species does not appear to have been previously recorded from any locality on the west coast north of the Gold Coast. A quite distinct species, *A. swinderenianus,* without any red on the head, is, however, found in Liberia.

It is common as a cage-bird in Freetown, but not common in a wild state, and I only observed it during the rains from about May till July. They go about in small flocks, and I usually found them near one spot, where they apparently came to roost in some low trees.

Family Strigidæ.

Asio leucotis.

Timini name "yufu," Limba "yik." One of these birds flew into a barrack-room at Tower Hill, Freetown, and was captured alive. I brought it home and gave it to the Zoological Gardens in Dublin.

On one or two occasions I saw a Brown Owl about the size of the English Barn-Owl. Owls do not appear to be common in Sierra Leone, or, if they are, contrive to conceal themselves uncommonly well, as, during my two years' residence, I did not see more than three or four, though I was constantly out in the bush at all hours.

Irides orange-vermilion.

Family Falconidæ.

Buteo auguralis.

A young bird was shot 23 April 1912 near the tree in which the nest was situated, but I did not discover it till the young birds had left it.

Kaupifalco monogrammicus.

The specimens in my collection shew little or no trace of the black bands on the primaries. From an examination of the series in the British Museum it appears probable that the black bands are characteristic of the immature plumage, and gradually become less distinct or entirely disappear with age.

Gypohierax angolensis.

Moderately common. The stomach of one that I shot contained remains of crabs. Major Webb, R.A.M.C., found filaria in a blood sample which I gave him.

Milvus ægyptius.

Kites, probably of this species, were common during the dry season. On one occasion I sent a native boy up to a nest on which a bird was sitting, with its mate alongside. I shot the one by the side of the nest and thought I had killed it, but neither of the birds moved till the boy reached the nest, and the sitting bird almost allowed the boy to catch it. There were no eggs in the nest.

Family PHALACROCORACIDÆ.

Phalacrocorax africanus.

Plotus rufus.

Both common on swampy creeks. They were very plentiful on the creek at Yandu.

Family ANATIDÆ.

Dendrocygna viduata.

Three specimens were obtained by Dr. Bower in the Karine District.

Pteronetta cyanoptera.

One specimen was obtained by Dr. Bower in the Karine District.

Family ARDEIDÆ.

Nycticorax nycticorax.

These Herons were plentiful in the mangrove-swamp at Yandu.

Family Scopidæ.

Scopus umbretta.

This species was originally described by Gmelin (Syst. Nat. i. pt. 2, 1789, p. 618) from specimens obtained in Senegal. On comparing two examples from the Bumpe R. in Sierra Leone, which I obtained in 1911, with the series in the British Museum from south and east Africa, I found that they were considerably smaller and generally darker in coloration, the wing-measurements of my specimens being about 254 mm., as compared with 300 to 330 mm. in the south and east African specimens. Mr. D. A. Bannerman very kindly went carefully through the series in the British Museum, and also, through the kindness of the Hon. Walter Rothschild and Dr. Hartert of the Tring Museum, was able to examine specimens from western Senegal and southern Nigeria, and found that the smaller size and darker coloration appears to be characteristic of the west African form.

In 1913 I obtained several more specimens from the Sherbro and Bagru Rivers, where they were common. These specimens agree in size and coloration with those previously obtained, nor did I observe any of the larger and paler form. The south and east African form may be worthy of distinction as a separate subspecies.

Family Charadriidæ.

Charadrius hiaticula.

Common about Freetown during the dry season.

Family Heliornithidæ.

Podica senegalensis.

One specimen only obtained on the Bum River. It was shot while swimming.

Family Columbidæ.

Turturœna iriditorques.

This fine Pigeon is fairly common in the hill-forest of the Peninsula, but, owing to its living in the tops of tall trees, it is extremely difficult to obtain specimens.

Its call is unmistakable, being a very deep sonorous "*coo-oo, coo-oo, coo-oo,*" the second and third repeat being in a lower key.

Though I frequently spent a considerable time stalking these birds, I only succeeded in obtaining a single specimen.

Turtur semitorquatus.

Very common in open bush-country.

Tympanistria tympanistria.

This bird has a curious whistling note quite unlike most of the Doves, and puzzled me for a long time.

Chalcopelia afra.

A bird of the open bush.

Calopelia puella.

This is altogether a forest-bird, never seen in the open. It is fond of hunting about on the ground amongst the dead leaves.

Family TURNICIDÆ.

Turnix nana.

A single pair obtained in the same locality as the Adanson Quails.

Family PHASIANIDÆ.

Francolinus ahantensis.

Appears to be much less common than *F. bicalcaratus.* The only pair which I obtained was shot by a native, who got them by sitting out all day in dense bush. They do not appear to come out into the open like *F. bicalcaratus,* at any rate during the daytime.

The calls of the two species are easily distinguishable. *F. ahantensis* is known to the natives by the name of "sesalwi" from its call. I heard them calling about Moyamba in the evening.

Francolinus bicalcaratus.

Commonly known as "bush-fowl." Two specimens, which by dissection were females, each had a spur on one leg. One of these had partially developed eggs in the ovary.

On one occasion, when carrying out practice with mountain-guns, one of my subalterns put up a Bush-Fowl off a nest containing five eggs, which was in a tuft of grass about six or eight yards in the rear of two guns which had just been fired. I and several men must have walked nearly over the nest several times.

This species has at least two if not more broods during the year.

Coturnix coturnix.

I only saw one or two pairs of these birds, in the same locality as *E. adansoni.*

Excalfactoria adansoni.

These Quails were pretty common in the open plains covered with three-foot-high grass, near Waterloo, about 20 miles south-east of Freetown. After being flushed once or twice they would allow one almost to tread on them before they would rise again.

Examples of the following species were also obtained by me in Sierra Leone, but I have no special notes in regard to them :—

Oriolidæ.
- Oriolus nigripennis.

Ploceidæ.
- Estrilda occidentalis.
- Malimbus scutatus.
- Coliuspasser concolor.
- Spermestes bicolor.
- S. cucullata.
- Ploceipasser superciliosus.
- Melanopteryx fuscocastaneus.
- Quelea erythrops.

Nectariniidæ.
- Chalcomitra verticalis.
- C. obscura.
- Cinnyris chloropygius.
- Anthreptes idius.

Zosteropidæ.
- Zosterops senegalensis.

Sylviidæ.
- Cisticola strangei.
- C. lateralis.
- C. rufa.
- C. swanzii.
- C. erythrops.
- Prinia sp. ?

Timeliidæ.
- Turdinus hypoleucus.

Pycnonotidæ.
- Andropadus gracilis.

Falconidæ.
Polyboroides typicus.
Elanus cæruleus.

Ardeidæ.
Butorides atricapillus.
Ardetta sturmii.

Ciconiidæ.
Dissoura microscelis.

Charadriidæ.
Charadrius orbesi.
Pluvianus ægyptius.
Stephanibyx inornatus.
Arenaria interpres.

Scolopacidæ.
Numenius arquatus.
N. phæopus.
Himantopus himantopus.
Totanus littoreus.
Tringoides hypoleucus.
Calidris arenaria.

Laridæ.
Sterna maxima.
S. cantiaca.

Rallidæ.
Porphyrio alleni.

Columbidæ.
Vinago calva.

XI.—*An Ornithological Expedition to the Eastern Canary Islands.*—Part II. By David A. Bannerman, B.A., M.B.O.U., F.R.G.S.*

Anyone studying the Avifauna of the Canary Archipelago is doubtless at once struck by the immense number of geographical or insular forms which have been described from these islands. Many well-known authorities are inclined, without taking the trouble to investigate the matter for themselves, to ridicule the idea that so many subspecies can possibly occur there. I have therefore been exceedingly careful to examine closely a series of every bird on which there might rest the slightest doubt as to whether it merits subspecific rank. In addition to this I have had the very great advantage of studying the birds *in their native islands* during the many delightful expeditions which I have made in the last few years. The result of my investigations shows that a very large majority of the subspecies described must unquestionably be "kept up." Naturally, in these island-forms many different grades (if such a word can be used of subspecies) occur side by side. Take, for instance, the Slender-billed Barn Owl (*Tyto flammea*

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* Continued from p. 90.

gracilirostris) and the Fuerteventuran Bustard (*Chlamydoti undulata fuerteventuræ*), and compare their claims to subspecific rank with those of the Sardinian Warbler (*Sylvia melanocephala leucogastra*) and the Canary Island Shrike (*Lanius excubitor kœnigi*). It is obvious that the first two mentioned have become much further removed from the parent form than the last two, in which very slight modification has taken place. Whether the Bustard and the Slender-billed Barn Owl have become more highly characterised in consequence of longer residence in the Canary Islands than the Shrike and Warbler, it is impossible to say for certain. For we have no means of ascertaining the exact period when any of these birds first became inhabitants of the group. In considering the elements which constitute such an important part in the forming of a well-defined insular race, we have, in the Canary Archipelago, to consider the geographical position of the group in relation to Africa, the climatic conditions of the various islands, their altitude, and particularly the physical environment with which the birds are surrounded. As *time* is the main cause of any species which is isolated from the typical form becoming modified, it might be supposed, and possibly in some cases correctly, that the first birds which arrived in the Canary Islands are those which show the greatest differentiation at the present day, *e.g.*, that the Slender-billed Barn Owl and the Fuerteventuran Bustard became isolated in the Canary Islands many years in advance of the Sardinian Warbler and the Canary Island Shrike. In considering this problem we must bear in mind that the several elements mentioned above undoubtedly act very differently on the various species which now inhabit the group. Another important factor to be reckoned with is the conditions under which the bird lived prior to its having gained a foothold in one or more of the islands. If the conditions are much the same we shall probably find that a very slight change, if any, has taken place in the bird. For instance, the Cream-coloured Courser (*Cursorius g. gallicus*) and the Sandgrouse (*Pterocles arenarius*) which inhabit the islands of Fuerteventura and Lanzarote are obviously immigrants from the neighbouring African coast, and finding, in these islands, a similar environment to that of their native land, they have settled down and remained quite unchanged from the typical race.

Then take the case of the Pale Titmouse (*Parus cæruleus degener*); this has become greatly modified on account of the unusual surroundings amongst which it now lives and, as in the case of many species inhabiting the waterless desert islands of Fuerteventura and Lanzarote, it is both smaller in size and paler in colour than allied forms living on the well-watered and mountainous western islands.

A particularly interesting case is that of the Barn Owls, of which there are two forms in the Archipelago. The subspecies already mentioned, *Tyto flammea gracilirostris*, is confined to the eastern desert group, where it lives in the holes of cliffs and ekes out a precarious existence. Turning to the western group of islands, we find that they are inhabited by a Barn Owl living under normal conditions which cannot be separated from dark examples of typical *Tyto flammea flammea*.

Provided that sufficient characters meriting subspecific rank are shown to be constant, I have accepted the names proposed, but undoubtedly several new forms have been recently described which can never be regarded as worthy of separation. Size alone is often a very dangerous character upon which to make a new subspecies; but the physical characteristics of the Canary Archipelago, especially as regards the eastern islands, tend to produce geographical races which have become modified in colour as well as in size. In the group with which this paper deals, Fuerteventura, Lanzarote, Graciosa, and the four outlying islets, a very distinct avifauna is to be found. This fauna, as might be expected, is allied to that of northern Africa, while that of the western islands is almost entirely European in character.

In the first part of my paper I have attempted to describe the physical peculiarities of the country through which I passed on my journey. Anyone who is acquainted with the western islands will not, therefore, be surprised at the number of forms peculiar to the eastern group *alone*.

In many cases, distinct, but closely allied geographical races are found to occur, the one in the eastern, the other in the western group.

Of these we may mention the following, arranged in tabular form :—

Subspecies peculiar to the Eastern Canary Islands.	Closely allied form inhabiting the Western Canary Islands.
1. *Acanthis cannabina harterti.*	1. *Acanthis cannabina nana.*
2. *Calandrella minor polatzeki.* (Also found in Gran Canaria, although this latter form has been separated on what I consider to be insufficient grounds.)	2. *Calandrella minor rufescens.*
3. *Parus cæruleus degener.*	3. *Parus cæruleus teneriffæ.* Tenerife ; Gran Canaria ; Gomera. *Parus cæruleus ombriosus.* Hierro. *Parus cæruleus palmæ.* Palma.
4. *Phylloscopus collybita exsul.*	4. *Phylloscopus collybita canariensis.*
5. *Tyto flammea gracilirostris.*	5. *Tyto flammea flammea.*
6. *Tinnunculus tinnunculus dacotiæ.*	6. *Tinnunculus tinnunculus canariensis.*
7. *Œdicnemus œdicnemus insularum.*	7. *Œdicnemus œdicnemus distinctus.*

On comparing the eastern with the western subspecies, it will be seen that those from the eastern group are, with one exception—*Tyto flammea gracilirostris,*—lighter in colour than the birds from the western islands. This is easily comprehended when we realise that the eastern islands are, as Canon Tristram correctly expressed it, "biologically simply western outliers of the Great Sahara," without any of the rich vegetation which clothes the mountainous western islands. The birds, therefore, which inhabit the eastern group have with the action of time learnt to harmonise more exactly with the desert surroundings amongst which they are placed.

Several Families are confined almost if not entirely to the eastern group, and are not represented by any species in any of the western islands with the exception of Gran Canaria. The south-east coast of this latter island to a large degree resembles Fuerteventura in character, and both Coursers (*C. g. gallicus*) and Trumpeter Bullfinches (*E. g. amantum*) * are found there: Sandgrouse (*P. arenarius*) have also been seen in this district in former years.

The following species and subspecies represent the Families alluded to above:—

Erythrospiza githaginea amantum.
Saxicola dacotiæ dacotiæ.
Saxicola dacotiæ murielæ.
Pterocles arenarius.
Chlamydotis undulata fuerteventuræ.
Cursorius gallicus gallicus.
Hæmatopus niger meadewaldoi.

Only one family is represented by two closely allied forms which inhabit different islands in the eastern group. The Chats (*Saxicola*) being represented in Fuerteventura by *Saxicola d. dacotiæ* and in Montaña Clara and Allegranza by *Saxicola d. murielæ*.

Other species and subspecies found in the eastern group which have not yet been mentioned are either peculiar to the Canary Archipelago or to the islands of the north Atlantic. Of these:—

1. *Carduelis carduelis parva,*
2. *Anthus bertheloti bertheloti,*
3. *Lanius excubitor kœnigi,*
4. *Sylvia melanocephala leucogaster,*
5. *Sylvia conspicillata bella,*
6. *Micropus unicolor unicolor,*
7. *Buteo buteo insularum,*
8. *Puffinus kuhli flavirostris* } Madeira and Canary Seas,
9. *Puffinus assimilis baroli* }
10. *Columba livia canariensis,*
11. *Caccabis petrosa kœnigi,*

are all breeding birds in the eastern group of islands with the possible exception of *M. u. unicolor*, which has not yet been definitely proved to nest there.

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* This bird is also occasionally met with in the desert parts of Tenerife.

The only breeding birds resident throughout the year which are not indigenous to the eastern islands, and which I do not consider separable from either (A) the typical species, or (B) the form inhabiting the opposite mainland of Africa, are the following:—

*1. *Corvus corax tingitanus.*
2. *Passer hispaniolensis hispaniolensis.*
*3. *Upupa epops epops.*
4. *Falco peregrinus pelegrinoides.*
5. *Pandion haliaëtus haliaëtus.*
6. *Neophron percnopterus.*
7. *Pterocles arenarius.*
8. *Cursorius gallicus gallicus.*
9. *Ægialitis alexandrinus alexandrinus.*
10. *Larus cachinnans.*
and possibly
11. *Coturnix coturnix africana.*

Even in this short list two species marked with an asterisk (*) have been described as geographical races and given new subspecific titles, which for reasons hereafter explained I am unable to recognise. Partial migration of several of the above species undoubtedly takes place.

Besides the Petrels there are a few birds which visit the eastern islands to breed and having done so again take their departure, *i.e.* the Turtle Dove (*Streptopelia t. turtur*), the Corn Bunting (*Emberiza c. calandra*), and the migratory Quail (*Coturnix c. coturnix*). It is also possible, but confirmation of this is necessary, that the House Martin (*Delichon u. urbica*) remains in small numbers to breed in the little island of Allegranza and, at the same time, in certain districts the Pale Swift (*Micropus murinus brehmorum*) undoubtedly remains to breed. The remaining species and subspecies which I met with in the eastern Canary Islands all belong to regular or casual visitors to the group which do not breed in the eastern islands. The majority, it will be seen, are Waders which touch at the islands during the spring and autumn migrations. It is obviously impossible without long residence in an island to determine to what extent the migration of any particular species takes place. We can only piece together the evidence supplied by naturalists whose combined observations stretch over the different months of the year. In this way we can arrive at fairly correct conclusions with regard to the more *obvious* migratory movements which take place; there is, however, a great deal to be learnt as to the extent to which migration occurs actually amongst the islands; the case of the Corn Bunting (*Emberiza calandra calandra*) alone supplies source for considerable investigation.

It is said to be very unusual for birds to strike the lanterns in the various lighthouses of the group, so that one of the surest sources of gaining information is thereby closed to us. We may infer, however, from the very large number of indigenous forms inhabiting the Canary Islands, that regular migration of Passerine birds is very limited. Von Thanner records that the lighthouse keeper on Allegranza told him that every strong wind coming from the neighbouring coast of Africa, and quite independent of the time of year and the season of migration, brings numerous small and large birds. A thorough survey of the Ornis inhabiting the African coast-line between Cape Ghir and Cape Bojador is necessary before we can discuss with any confidence the relation which it bears to that of the Canary Archipelago. Unfortunately, this part of the African mainland is inhabited by lawless nomad tribes, who have on many occasions shown themselves to be extremely hostile to strangers. The Spanish fishermen from the islands, whose trade takes them along this coast, hold the tribesmen in the greatest dread, and seldom land there unless absolutely compelled to do so.

In the following list I have given the references to each particular species as it was mentioned in the first part of my account of the Expedition, which appeared in the January number of 'The Ibis,' 1914, pp. 38–90.

Reference to this paper is quoted in the following pages as "Bannerman, Part I."

My special thanks are due to the authorities of the Tring Museum for the unfailing courtesy with which they have always met my request for the loan of specimens. I should like also to acknowledge the help which I have received from Mr. Tom Iredale, whose exceptional knowledge of scientific literature has often enabled me to determine obscure references which would otherwise have been passed over.

I regret that in Part I. of my paper I omitted to acknowledge the debt which I owed to Mr. Claude Grant, who kindly assisted me in selecting the commissariat of the expedition.

The total results of the collections made, including specimens from Gran Canaria, comprise 412 bird-skins (including 3 new subspecies), 224 eggs, and a few skeletons of the more interesting forms; two hedgehogs of a new species, ten bats, and one rabbit. Besides these, large collections of entomological, botanical, and geological specimens were procured.

Corvus corax tingitanus. Moroccan Raven.

Corvus corax tingitanus Irby; Bannerman, Part I. pp. 49, 58, 61, 75, 85, 88.

Corvus corax canariensis Hart. & Klein.

In my recent paper on the birds of Gran Canaria ('Ibis,' 1912, p. 625), I discussed the possibility of upholding *C. c. canariensis* as distinct from the form inhabiting the neighbouring African coast. Eventually I came to the conclusion that specimens from Gran Canaria must be united with *C. c. tingitanus* Irby.

I have lately had occasion to re-examine the material from the Canary Islands in the British Museum; this has only served to strengthen the views which I originally expressed. Examples from Tenerife, Gran Canaria, and Fuerteventura cannot be separated from the Moroccan Raven. The type of *C. c. tingitanus* Irby, in the National Collection, possesses an *exceptionally* short and thick bill, while certain other examples from Morocco and Algeria have longer, weaker, and straighter beaks than in the type-specimen. I have already drawn attention to the Ravens from Gran Canaria which have the bill, if anything, heavier than in examples of *C. c. tingitanus*. The shape, build, and curve of the bill seem to me to be subject to individual variation in both *C. c. tingitanus* and so-called *C. c. canariensis*. I can see no difference in the shape of the heckles, although, as Dr. Hartert affirms, they may usually be longer.

Dr. le Roi, of Bonn, who has examined a large series of Ravens from the islands, wrote to me last year that he had come to the same conclusion as I have and had united the birds of the Canary Islands with *C. c. tingitanus*.

Ravens were met with sparingly in Fuerteventura but were more common in Lanzarote, where a dozen at a time were seen above "El Risco." They were also present in Montaña Clara and Allegranza.

A single example was obtained in Fuerteventura.

Bill and feet black, iris very dark.

Carduelis carduelis parva. Least Goldfinch.

Carduelis carduelis parva (Tsch.); Bannerman, Part I. p. 48.

It will be noticed that in this Goldfinch the ends of the primaries and secondaries are often "notched"—a peculiarity which is caused by the white tips being worn away to the exact pattern of the original white markings. I have never noticed this in *Carduelis c. carduelis*.

All the examples which I have examined from Fuerteventura appear to have abnormally long bills *.

The Least Goldfinch was met with only in Fuerteventura, where it has been introduced from the western islands. It is fairly plentiful in the Barranco de la Peña. The examples obtained were all from one locality in Fuerteventura.

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* [It is interesting to note that the Goldfinch introduced into Bermuda, recently described as *C. c. bermudiana* Kennedy, has, as is usually the case when a bird is imported into a tropical mountainous island, become much darker in colouring, as well as smaller in size. Doubtless in another century the Goldfinch, which has only recently been introduced into the desert island of Fuerteventura, will have become differentiated from the form found in the mountainous western islands of the Canary group. This bird we shall expect to become lighter in colouring and very possibly even smaller in size than is at present the case; probably the bill will become stronger through having to adapt itself to the harder conditions of life in a desert island. It will be instructive to note how soon the action of environment will make itself felt on this particular species.]

Bill flesh-colour, tip dark; iris dark hazel; feet flesh-colour. The testes of the males were large.

Acanthis cannabina harterti. Hartert's Brown Linnet.

Acanthis cannabina harterti Bannerman, Bull. B. O. C. xxxiii. 1913, pp. 38, 39; Bannerman, Part I. pp. 44, 48, 52, 55, 56, 57, 59, 60, 65, 85.

This new subspecies, which I have recently described, is confined to the eastern islands of the Canary Group. It is easily distinguished from the form found in the western islands by the following characters:—

1. The upper parts are several shades lighter and lack the particularly rich colouring of the western island form.
2. The sides and flanks lack the deep chestnut markings and are less boldly streaked with light brown.
3. The white area on the belly is more extended.

Hartert's Brown Linnet appears to be thinly distributed in Fuerteventura, while in Lanzarote it is practically confined to the Valley of Haria, where it is extremely plentiful. A single bird was seen on Graciosa, but in Montaña Clara it was not observed. It was again found in Allegranza, where, however, it was scarce and very shy.

The series collected was chiefly remarkable for the brilliant crimson breasts of the males, especially in the case of those from Lanzarote, although this is not a distinguishing character of the subspecies.

A large series was obtained from Fuerteventura, Lanzarote, and Allegranza.

Bill light horn-colour; iris dark hazel; feet brown.

The following clutches of eggs were taken:—

(*a*) 4 eggs, La Peña, Fuerteventura, 11. v. 13.
(*b*) 3 eggs, Antigua, Fuerteventura, 15. v. 13. (In an advanced stage of incubation.)
(*c*) 2 eggs, Yaiza, Lanzarote, 20. v. 13.
(*d*) 4 eggs, Haria, Lanzarote, 24. v. 13.

The eggs obtained showed little variation: ground-colour pale bluish green, thickly spotted, speckled and occasionally pencilled at the thick end with purplish brown and underlying markings of lilac; often a distinct zone is noticeable round the broader end, while the narrow end is sometimes almost unspotted.

Measurements: maximum 19 × 13·5 mm.; minimum 15·5 × 13 mm.

Erythrospiza githaginea amantum. Canarian Trumpeter Bullfinch.

Erythrospiza githaginea amantum Hart.; Bannerman, Part I. pp. 43, 50, 52, 54, 56, 65, 85, 89.

A small but beautiful series of this Desert Bullfinch was collected, the adults being in particularly fine plumage, but young birds in various stages were also obtained. As no account of the juvenile plumage of *E. g. amantum* appears to have been published, I append the following description of specimens in my collection depicting two of the stages through which the young birds pass.

The general colour of the fully-fledged young is throughout pale ochraceous brown, brighter on the rump, and becoming paler on the abdomen. The primaries are dark sepia-brown margined with buff, the secondaries being broadly edged, on the outer web, with the same colour. The tail is dark sepia-brown edged with ochraceous buff, the two central rectrices being more deeply margined on both webs than are the outer rectrices. Immature birds entirely lack the rose colour of the adults. The bill is horn-colour and the legs pinkish buff. In very young birds which have not left the nest, we find that the plumage is very different, being of a pinkish-fawn colour and *entirely lacking the sandy tinge* which is gained after the young have commenced to fly. The bill, moreover, is very light yellowish horn, which becomes darker as the bird advances in age.

The Trumpeter Bullfinch is an exceedingly common resident in the most arid parts of Fuerteventura, but is much less abundant in Lanzarote. On Graciosa two small flocks were seen, while on Allegranza only a single flock was noted.

All the adult males were in very bright plumage and had not yet finished breeding, although many birds of the year were seen in company with the adults.

Specimens were obtained from Fuerteventura, Lanzarote, Graciosa, and Allegranza.

Bill coral-red; iris dark hazel; legs and feet pinkish buff.

Two nests were found on the same date:—

(*a*) containing 4 young, Antigua, Fuerteventura, 15.v.13.
(*b*) containing 5 eggs, ,, ,, ,,

besides which a large series of 24 eggs was obtained chiefly from Fuerteventura.

Ground-colour pale blue, usually marked sparingly with dark purplish-black and reddish-brown spots and dots. The markings are mostly confined to the larger end. Several of the eggs in this series are charily marked with minute isolated dots of purplish black, while another, in contrast, is boldly spotted round the thick end.

Measurements: maximum 20·5 × 15 mm., minimum 19 × 15 mm.

One egg in the above series is particularly narrow, measuring 19·5 × 14 mm.

Passer hispaniolensis hispaniolensis. Spanish Sparrow.

Passer hispaniolensis hispaniolensis (Temm.); Bannerman, Part I. pp. 43, 49, 50, 54, 56, 59, 60.

In the low-lying cultivated districts, wherever there are palm-trees, these noisy Sparrows swarm. They also resort to the wells, in the walls of which they are said to roost in quantities. Their nests were invariably placed in the palm-trees, where they are most difficult to reach. Their habit of nesting in the same tree as the Kestrel Hawk has already been noted elsewhere.

Specimens were obtained from Fuerteventura and Lanzarote in fine breeding-plumage. None were found in the smaller islands.

Bill black; iris dark hazel; feet deep buff.

Emberiza calandra calandra. Corn Bunting.

Emberiza calandra calandra Linn.; Bannerman, Part I. p. 59.

Emberiza calandra thanneri Tschusi, Orn. Jahrb. 1903, p. 162.

In 'The Ibis' for 1912, p. 611, I discussed at some length the form or forms of *Emberiza* found in the island of Gran Canaria. At first I inclined to the idea that there were two distinct forms inhabiting the island—a resident mountain race and a coastal migratory race, the chief difference of which was in size. Finally, however, I came to the conclusion, with the aid of Dr. Hartert, who kindly examined the series with me, that the large birds were males and the small birds were females. This did not quite explain the fact that the small birds were invariably much lighter in colouring and had the breast-markings much less pronounced, for there is no constant difference in the plumage of the two sexes, although there certainly is in size.

I should now like to correct a statement which I made in my previous paper. On page 611 (footnote) I stated that I could not vouch for the sexes of specimens *h*, *k*, *l*, and *u*, as I had not dissected them myself. At the time of writing this I was quite unaware that the sex of these four specimens had been personally ascertained by Mr. Pycraft, who examined the sexual organs under a microscope.

Dr. Hartert's supposition that the sex of these birds had been wrongly determined cannot, therefore, be allowed, although at the time it certainly appeared probable.

In the spring of this year (1913), while in Gran Canaria, I collected an additional series of Corn Buntings and found that all the *breeding* birds in the mountain district of Firgas (1625 ft.) belonged to the large dark race. These birds all had eggs at this time, April 22nd to May 4th, and *not a single small light coloured bird was to be seen in the island.*

One example of the large dark form was obtained in Lanzarote, and through the kindness of Miss Jackson I procured a small series from Tenerife—the type-locality of

E. c. thanneri—these birds are similar to those shot at Firgas in Gran Canaria.

Based on a further examination of this species, with the additional material available, I have come to the following conclusions :—

1. That the large dark-breasted birds cannot (at present) be distinguished from *Emberiza calandra calandra*. In this opinion I am supported by Dr. Sassi (*vide* Orn. Jahrb. 1908, p. 34).
2. That these are the resident breeding birds which, with one exception, were all found in the mountain districts.
3. That the wing-measurements of these larger birds vary in males from 94–102 mm., and in females from 92 mm.
4. That the light-breasted small birds are confined to the low coastal regions (likewise only one exception known).
5. That the wing-measurements of this small race vary in males from 87–90 mm., and in females from 85–87 mm.
6. That the small light race has never been found breeding.

The evidence at present available points to this small race being winter migrants, but from where is yet to be proved. If it could be shown that these birds are migrants from a neighbouring island or part of the African coast, I should not have the slightest hesitation in giving to them a new subspecific name. Until their breeding-place is discovered such a course can only lead to confusion, but it remains an undisputed fact that the birds from the coastal region of Gran Canaria can be distinguished *in life* as well as in the skin from the form inhabiting the mountains.

During the expedition in the eastern islands we only met with the Corn Bunting on one occasion, as we were crossing the high plateau of the Monte Famara range in Lanzarote. A single bird was obtained here which was actually the only one seen throughout the trip. I have not been able to discover at what season the Corn Bunting arrives in and leaves the eastern islands. Polatzek writes that "it is a frequent breeding bird on all the islands; resident only on the western isles; a bird of passage on the eastern." He goes on to say that "on the eastern islands, especially as regards Lanzarote, they often appear near the wells by the houses, and they collect in flights on the stubble fields after harvest and in the old straw, finally leaving both islands nd returning again in the spring."

Polatzek collected five nests in Fuerteventura, and took clutches of eggs on the 20th of March and the 7th of April. I myself received a clutch from Fuerteventura in the middle of June which contained well-developed embryos. From these dates it would appear that the Corn Bunting usually arrives in Fuerteventura and Lanzarote towards the end of February and remains to breed in these islands, departing again after the summer harvest.

If this is the case, then it is very remarkable that I did not come across the bird in my journey which, as can be seen by referring to the map (Part I. pl. II.), covered the greater part of both the large islands. I remained in the eastern group from May the 5th until June the 17th and kept a sharp look out for this particular species. Whether the exceptionally cold and stormy weather which was experienced at this time had anything to do with the non-arrival of the Corn Buntings, it is difficult to surmise, but it is certain that for some reason they had not kept to their usual date of arrival in the eastern islands.

One bird was obtained in Lanzarote.

Bill light horn; iris dark hazel; legs buff, darker on the feet.

A clutch of eggs, said to have been taken at Tuineje (Fuerteventura), was sent to me on my return to Gran Canaria. I received these eggs, which contained well-developed embryos, in the middle of June. The clutch consisted of four eggs remarkably handsomely marked.

Ground-colour pinkish stone-colour; heavily spotted, streaked, and blotched, chiefly at the larger end, with very dark brown and purplish-black markings, which form a complete zone round the thick end. Beneath the heavy blotches are underlying markings of lavender-grey, and faint streaks are spread irregularly over each egg.

The measurements of this clutch are:—

23 × 18·5; 22·5 × 17·25; 22 × 18; and 22·5 × 18 mm.

Another clutch was taken at Firgas in Gran Canaria, 28. iv. 13.

Calandrella minor polatzeki. Polatzek's Short-toed Lark.

Calandrella minor polatzeki Hart.; Bannerman, Part I. pp. 43, 44, 45, 46, 49, 50, 52, 53, 54, 56, 58, 59.

The young of this desert Lark is easily distinguished in life from the adult by the much lighter sand-coloured plumage, and by the light buff tips to the feathers of the head, mantle, and back. The secondaries are very broadly edged with sandy-buff and there is a conspicuous narrow inner margin of deep sepia-brown; this contrasts strongly with the lighter brown colour of the rest of the feather, the shaft of which is also dark sepia-brown. The crest is much shorter in the immature birds than in the adults. In nestlings the upper parts have a spotted appearance caused by the deep brown centres to the feathers of the crown and back which are tipped with buff.

A very complete description of the seasonal changes of this desert Lark is given by Herr Polatzek (Orn. Jahrb. 1908, p. 193).

Polatzek's Short-toed Lark is one of the commonest birds to be met with in the two large eastern islands, where, however, it is not universally distributed. Wherever there is corn planted, particularly on the higher ground, these little birds are most plentiful. They abound on the central plains of Fuerteventura, but are less common on the west coast. In Lanzarote they were entirely absent from the valley of Haria, but swarmed on the high tableland which we crossed before descending into this valley. In the smaller islets they were entirely absent. During our journey in Fuerteventura and Lanzarote a large number of young birds were noted, and a nest containing young was found at Antigua (Fuerteventura) on May the 15th.

A series was obtained from Fuerteventura and Lanzarote.

Bill light horn-colour; iris dark hazel; feet pale buff.

In a series of 32 eggs of *C. m. polatzeki* procured in Fuerteventura, an extraordinary variation is noticeable in shape and coloration, in which at least three more or less distinct types are recognisable.

The most common type appears to have a ground-colour of creamy-white and to be fairly regularly spotted with pinkish brown or greenish brown, with underlying spots of lavender-grey.

Another type of which I obtained several examples had the ground-colour creamy-white with dense blotches of greenish brown, either forming a complete girdle round the middle of the egg or a zone round the broad end. In many cases underlying blotches of pale purplish grey are present. All the eggs in this class have a distinct yellowish tinge about them.

The third and last distinguishable type, which seems to be the most uncommon, has a ground of stone-colour and is finely speckled with pale greenish grey becoming suffused at the larger end.

The eggs of this subspecies are usually oval and slightly pointed in shape. The measurements of the above series of 32 eggs are: maximum 21·5 × 14 mm.; minimum 18 × 14 mm. Two peculiarly shaped specimens measure 19·5 × 16 and 20 × 13 mm. respectively.

Anthus berthelotii berthelotii. Berthelot's Pipit.

Anthus berthelotii berthelotii Bolle ; Bannerman, Part I. pp. 43, 44, 45, 46, 49, 52, 54, 55, 56, 57, 59, 60, 65, 75, 85, 89.

Anthus berthelotii lanzarotæ Tschusi & Polatzek, Orn. Jahrb. 1908, p. 191.

The Pipit from the eastern Canary Islands has been separated from the bird found on the western islands under the name *Anthus b. lanzarotæ*. I purposely collected a large series from the eastern islands in various plumages to compare with the series I had already obtained of *Anthus b. berthelotii* in Gran Canaria. With the added material in the British Museum I have carefully studied the validity of this new form. I consider that the reasons for assigning subspecific rank to the Pipit of the eastern islands are far too complex to be upheld, even if the supposed characters were constant. From the large series at my disposal (including birds killed in every month) the characters given appear to be very doubtful, and therefore I unite the Pipits from the eastern group with *Anthus b. berthelotii.*

The form of Berthelot's Pipit inhabiting Madeira and Porto Santo is easily distinguishable from the typical form, a well-marked character being the length of the bill, which for a bird of this size is most pronounced. This has been named by Dr. Hartert *Anthus berthelotii madeirensis.*

Berthelot's Pipit was met with fairly plentifully in most parts of Fuerteventura and Lanzarote. It was also found on the small islands of Graciosa, Montaña Clara, and Allegranza. Many of the birds were in full moult in June. Their habits are too well known to require further mention here.

A large series was collected from Fuerteventura, Lanzarote, Graciosa, Montaña Clara, and Allegranza.

Bill light horn-colour; iris dark hazel; feet pale buff.

The following clutches of eggs were secured :—

(*a*) 5 eggs, Yaiza, Lanzarote. 22. v. 13.

(*b*) 4 eggs (2 broken), Haria, Lanzarote. 26. v. 13.

Ground-colour greyish stone-colour, minutely freckled with different shades of brown, greenish grey and lavender-grey with occasional hair-streaks generally towards the thick end. Apart from various degrees of stone-colour there is very little variation in the eggs which I have seen from the eastern Canary Islands. I have never come across any similar to those described in the 'Catalogue of Birds' Eggs' in the British Museum, from clutches obtained by Capt. Savile Reid. These eggs, which were taken in Tenerife by the above mentioned extremely careful collector, closely resemble those laid by *Calandrella minor rufescens.*

The following are the measurements of the eggs obtained :—

Clutch (*a*) 20 × 15, 19·5 × 14·5, 20 × 14·5 (3 eggs);

,, (*b*) 21 × 15, 20·5 × 14·5 (2 eggs broken).

Parus cæruleus degener. Pale Blue Titmouse.

Parus cæruleus degener Hart.; Bannerman, Part I. pp. 47, 60.

The young in first plumage have the back greyish green, the underparts are paler throughout than in the adult and they lack any white on the head. The parts which in the adult are white, in the young bird are dull yellow. The black throat is also wanting in juvenile specimens.

The Pale Titmouse is confined to the islands of Fuerteventura and Lanzarote, in both of which it is very locally distributed. In Fuerteventura we met with it for the first time in the Tamarisk valley of La Peña, where both adult and immature birds were common. This was the only occasion upon which we met with *Parus c. degener* in this island. It occurs, however, in several districts, particularly where cactus abounds, and it is also very partial to fig plantations.

In Lanzarote the range of this species is equally narrow, being restricted to the valley of Haria and immediate neighbourhood, where it is very plentiful. Mr. Meade-Waldo found a nest containing young on El Risco on the 8th of April. We were apparently too late in the year to find the eggs ourselves.

A series was obtained from Fuerteventura and Lanzarote.

Bill dark horn; iris dark hazel; feet slate-colour.

Lanius excubitor kœnigi. Kœnig's Grey Shrike.

Lanius excubitor kœnigi Hart.; Bannerman, Part I. pp. 43, 44, 46, 48, 49, 50, 53, 54, 57, 60, 65, 89.

The series of this Shrike which I obtained shows the bird in different stages of moult; many of the birds are in very worn plumage, the primaries being quite brown. Several examples have a very sandy appearance, caused in most cases by the bird moulting out of the immature plumage into the grey of the adult. I did not notice any birds in the complete sand-coloured plumage in which Mr. Meade-Waldo found one or two.

Examples of Kœnig's Grey Shrike were found in

Fuerteventura, Lanzarote and Graciosa, where they are evenly distributed over the greater part of the islands.

Bill black; iris dark hazel; feet black.

Phylloscopus collybita exsul. Lanzarote Chiffchaff.

Phylloscopus collybita exsul Hart.; Bannerman, Part I. p. 60.

At the time of my visit to Lanzarote I was not aware that Dr. Hartert had separated and named the Lanzarote Chiffchaff. On comparing the examples obtained with my specimens from Gran Canaria of *P. c. canariensis*, I was at once struck with the difference which existed in colour between these two island forms. The wing formula, however, appears to be similar to that of *P. c. canariensis*.

Dr. Hartert has kindly sent me a small series of this Chiffchaff from the Tring Museum. It is distinguished from *P. c. canariensis* by its somewhat smaller size, somewhat lighter, less olive-brown upperside, and less red, more fawn-yellow underside. The under wing-coverts are a paler shade of yellow.

The Lanzarote Chiffchaff was not met with until we reached the valley of Haria, where, however, only three or four birds were heard. They are resident in this district throughout the year according to Polatzek, who took two nests. This ornithologist, who spent a considerable time in Lanzarote, found them much more plentiful in the Haria district than I did myself; he also discovered them at Mal Pais.

This Chiffchaff has not yet been found in Fuerteventura or in any of the smaller islets.

Examples were obtained from Lanzarote.

Bill dark horn-colour; iris dark hazel; legs and feet very dark brown in one specimen, greenish brown in the other, soles yellow.

Sylvia melanocephala leucogastra. Canarian Black-headed Warbler.

Sylvia m. leucogastra Ledru; Bannerman, Part I. p. 47; Sassi, Orn. Jahrb. 1908, p. 34.

Dr. Sassi, who compared a series of the Sardinian Warbler from the Canary Islands with a series from the typical locality, came to the conclusion that specimens from Canary could not be distinguished from European examples. Dr. Sassi, however, on his own statement only compared males, which, as I pointed out in my paper on the Birds of Gran Canaria ('Ibis,' 1912, p. 601), very closely approached *Sylvia m. melanocephala* Gm., but a much greater difference is exhibited by the females. An examination of hens from the Canary Islands and from Sardinia will, I think, show clearly that the two races must be kept apart.

This geographical race of the Sardinian Warbler is by no means rare in Fuerteventura, though necessarily rather local in its distribution, being practically confined to the places where tamarisks flourish. We first met with it in the barranco de la Peña (Part I. Pl. III. fig. 1) on the west coast, where it was fairly plentiful; it must also be found in the dry valley of Gran Tarajal on the east coast. Herr von Thanner met with it in the district known as Rio de las Palmas and also at Antigua, where, however, I did not see it. It had finished breeding in Fuerteventura, several empty nests being found in the tamarisk bushes.

We did not come across this Warbler in Lanzarote or any of the smaller islands; Polatzek, however, mentions the bird from Lanzarote.

A small series was obtained from Fuerteventura.

Bill dark blackish horn-colour, lower mandible whitish at the base; iris light hazel, eyelids brilliant reddish orange; feet ochreous yellow.

Sylvia conspicillata bella. Canarian Spectacled Warbler.

Sylvia conspicillata bella Tschusi; Bannerman, Part I. pp. 60, 65, 85, 89.

In Fuerteventura we only saw this little Warbler in the north of the island on one occasion. In the south we met with it again in the barranco of Gran Tarajal. It is said by von Thanner to appear everywhere but not to be very numerous. Polatzek notes that he seldom saw it in Fuerteventura. We next came across this bird in Lanzarote, where it frequented the valley of Haria, but it was even more plentiful on Graciosa. This was the only small island upon which we found it.

A small series was procured from Fuerteventura, Lanzarote, and Graciosa.

Bill light horn-colour; iris light brown; feet deep buff.

Saxicola dacotiæ dacotiæ. Fuerteventuran Stonechat.

Saxicola dacotiæ dacotiæ Meade-Waldo; Bannerman, Part I. pp. 43, 44, 47, 48, 52, 89.

The local range of this Chat appears to have increased considerably in Fuerteventura since Mr. Meade-Waldo discovered it in 1888.

It may be of interest to summarise the observations of naturalists who have visited Fuerteventura, on the distribution of this Chat so far as it has been at present observed.

1888. Discovered near Tuineje by Mr. E. G. B. Meade-Waldo.

1889. Meade-Waldo found it again between Pozo Negro and Tuineje; a few seen in the mountains near Tuineje, probably in the direction of Catalina Garcia, two pairs seen in a small mountain barranco where there was a little scrub. Later a pair was found on the beach at Gran Tarajal. Meade-Waldo notes in his diary that the Chats seem very rare.

1902 Herr Polatzek, who spent three and a half years amongst the
1903 islands, chiefly I believe in Fuerteventura, found them in the
1904 barranco de Rio Cabras (Valle de la Laguna), and in other
1905 ravines on the *eastern* side of the island. They were also met
with in a small valley near Casillas del Angel and in the district
round Oliva. Polatzek remarks that it is possible to go a long
way without meeting with any and that he *never* found them
on the western side of the island; he suggests, as a reason for
their absence from the western coasts, that in strong winds they
struggle heavily and have much difficulty in flying.

1904 Herr von Thanner, who has made several collecting trips to this
1905 island, thought that the breeding range of this species was
1910 spreading, but remarks that these Chats are often confined to
1912 very narrow places. He appears to have found them especially
in the low valleys which lose themselves towards the east and
south-east coasts. They were also seen in the neighbourhood of

Oliva, and were met with in the north of the island in all places favourable to them, even in the interior. In 1905 he found them at Rio de las Palmas. This is the first mention of this species west of the central range of hills.

1913. In the route which I followed [*vide* Map, in Part I. Pl. II.], starting from Puerto Cabras and crossing to Toston on the north-west coast, we first met with these Chats between Caldereta and Oliva, several being seen there. We next found them in he Tamarisk valley of La Peña [*vide* Part I. Pl. III. fig. 1], and particularly towards the upper part of this barranco [*vide* Part . Pl. IV. fig. 1]. In this dried-up water-course *Saxicola d. dacotiæ* was plentiful, but once the ascent to Betancuria had begun we saw no more of the Chats until we had crossed the dividing range and gained the plains. At Antigua I saw single young bird which had evidently been reared in the neighbourhood. None were seen near Puerto Cabras, but we again noticed them near the beach at Gran Tarajal.

From these notes it will be seen that these interesting Chats are now pretty well distributed over the island, but curiously enough they have, so far as we know, never yet crossed the dividing strait to Lanzarote. There is almost always a strong breeze blowing in the eastern islands, and as these small birds find such difficulty in battling with the wind, it is probable that this is the chief factor in confining their distribution to the one island. For some account of their habits see Part I. of this paper, pp. 47–8.

A good series was obtained from various parts of Fuerteventura.

Bill black; iris dark hazel; feet dark brown.

Saxicola dacotiæ murielæ. Muriel's Chat.

Saxicola dacotiæ murielæ Bannerman, Bull. B. O. C. vol. xxxiii. 1913, p. 37; id. Part I. Pl. IV. & pp. 74, 75, 76, 77, 84, 86.

This Chat is confined to the outlying islets of Montaña Clara and Allegranza. A full description and account of this interesting new subspecies is given in Part I. of this paper (*vide supra*).

A series was obtained in Montaña Clara and Allegranza showing several stages of plumage.

Bill black; iris dark hazel; legs black.

Hirundo rustica rustica. Swallow.

Hirundo rustica rustica Linn.; Bannerman, Part I. pp. 49, 86.

Swallows were seen on rare occasions only; they were first met with at La Peña on the west coast of Fuerteventura, where several were hawking over the fields of corn and maize. They do not breed in the islands but are seen annually on migration. At this time of year (May and June) they are fairly common in Gran Canaria.

A specimen was obtained in Fuerteventura.

Bill black; iris dark hazel; feet dark brown; the body was very fat; the testes small.

Delichon urbica urbica. House Martin.

Delichon urbica urbica (Linn.); Bannerman, Part I. pp. 55, 77, 86.

House Martins were not seen in Fuerteventura, but were almost the first species noted upon our landing in Lanzarote. A pair was flying over the small port of Tiñosa and one was obtained. It proved to belong to the European species and not, as I thought possible, to the smaller form *D. u. meridionalis* of north-west Africa. In the north of this island they were not seen, but a single bird was noticed flying high over the cliffs of Montaña Clara.

In Allegranza a small colony of Martins was discovered by my taxidermist; they are said to breed in the island, and certainly the birds were seen entering holes in the face of the cliff; unfortunately they were all inaccessible. Bishop estimated their numbers at about twenty birds. It is worthy of note that on a subsequent visit to this part of the island all signs of the House Martins had disappeared. Dr. Hartert (Vög. pal. Faun. i. p. 808) remarks that he considers the statement that the House Martin has bred in the Canary Islands rests on an error, and until more definite evidence is forthcoming I am inclined to agree with him. It certainly does not breed on Tenerife or Gran Canaria.

Examples were obtained from Lanzarote and Allegranza.

Bill black; iris dark hazel; legs feathered, claws dusky.

Micropus murinus brehmorum. Pale Swift.

Micropus murinus brehmorum Hart.; Bannerman, Part I. pp. 49, 51, 52, 53, 55, 56, 61, 77, 86, 88.

All the Swifts which we collected appeared to have extremely white throats. The Pale Swift is a migrant to the eastern Canary Islands, arriving, according to Polatzek, at the end of February and departing in September. This observer records it only as a bird of passage in Lanzarote but found it breeding in Fuerteventura, where Meade-Waldo also discovered a colony. I found these Swifts to be plentiful in the eastern group during May and June, but particularly so in Fuerteventura. Here, in the neighbourhood of Puerto Cabras, they were seen in numbers hawking over the plains; they were also met with throughout our journey in the island, being especially numerous at Toston, in the valley of La Peña, and at Antigua. I did not myself find any nests, but Swifts doubtless still breed plentifully in this island.

In Lanzarote they were much less common, and were only seen in any numbers at Tiñosa and once over the town of Haria. Single birds were noticed from time to time at various points on the route. They were not seen in Graciosa, but they were found on both the small islands of Montaña Clara and Allegranza, in the former of which they appeared to be breeding in the cliffs.

A series was obtained from Fuerteventura, Lanzarote, Montaña Clara, and Allegranza.

Bill black; iris dark hazel; feet purplish brown.

Micropus unicolor unicolor. Madeiran Black Swift.

Micropus unicolor unicolor (Jard.); Bannerman, Part I. pp. 49, 53, 88.

This little Swift was seen on several occasions in Fuerteventura, where it was not nearly so plentiful as the preceding species, being, in fact, quite rare. A few were recognised hawking with *M. m. brehmorum*, over the plains near Puerto Cabras in Fuerteventura. In Lanzarote they were not seen, but I should be much surprised if they do not nest in the high cliffs below Monte Famara and on the precipice known as El Risco. Curiously enough, it was *M. m. brehmorum* and not this species which we found on the small islets. Undoubtedly the Black Swift breeds on the western islands, as on May the 1st I shot a specimen in Gran Canaria with well-developed eggs in the ovary. There is no reason why this bird should not breed in the eastern group, but up to the present there are no actual records of its having done so.

Several examples were obtained from Fuerteventura.

Bill black; iris dark hazel; feet purplish brown, rather more pink than in *M. m. brehmorum*.

Upupa epops epops. Hoopoe.

Upupa e. epops Linn.; Bannerman, Part I. pp. 43, 44, 46, 49, 50, 51, 52, 53, 54, 57, 59, 60, 65, 86.

Upupa epops pallida Erl.; Floericke, A. d. Heimat d. Kanarienvög. 1905, p. 32.

Upupa epops petrosa } Floericke, A. d. Heimat d. Kana-
Upupa epops pulchra } rienvög. 1905, p. 32.

Upupa epops fuerteventuræ Polatzek, Orn. Jahrb. 1908, p. 166.

The unfortunate Hoopoes found in the Canary Islands have been "split up" into a regular army of subspecies, as can be seen by the formidable list above! No species has been more confused, and the indiscriminate naming and splitting up of a bird of such migratory habits on the most meagre evidence is to be sincerely deplored.

I had, previously to setting out on my last expedition and while working on the "Birds of Gran Canaria," attempted to discriminate between the alleged forms without success. While in the eastern islands, therefore, I paid special attention to the Hoopoes, and collected examples from every locality visited in Fuerteventura and Lanzarote. With a series of twenty specimens obtained by myself in Gran Canaria and the eastern islands, together with a much larger number acquired from other sources, I have had ample material with which to thoroughly study the question.

Apparently Floericke is responsible for a good deal of the confusion which has arisen in the past with regard to the Hoopoe of the Canary Islands. In 1905 he described and named two new subspecies from Tenerife and Gran Canaria alone, besides apparently recognising *U. e. epops* and *U. e. pallida* Erl. as birds of passage occurring in the same islands! These forms he named (1) *U. e. petrosa*, and (2) *U. e. pulchra*.

Later Polatzek, turning his attention only to the Hoopoes from the eastern islands, recognised two forms: (*a*) From Fuerteventura, which he described and named *U. e. fuerteventuræ*, and (*b*) from Lanzarote, which he described but did *not* name, but which Thanner suggests should be named *U. e. lanzarotæ*. Polatzek also recognises *U. e. epops* from all the islands of the group.

We have, therefore, the astonishing number of six supposed distinct forms of *Upupa* in the Archipelago!

To deal first with the subspecies described by Floericke, form 1 may be dismissed as quite unworthy of consideration. Form 2, *U. e. pulchra*, is said to be "long-beaked, short-winged, and to be a bird of passage."

Form *a*, of Polatzek, named *U. e. fuerteventuræ*, is said to be distinguished from European and African examples by (1) its more vivid colouring, (2) its long beak, and (3) by its being a resident bird. Moreover, it is said to be a large species and to be a winter-breeding bird.

Von Thanner, who has paid special attention to this question, is much more moderate in his conclusions than either of the above-mentioned. This observer, who should be well acquainted with the Hoopoe in all the islands, recognises two forms, the typical *Upupa e. epops* and *Upupa e. pulchra* Floericke, with which he considers *U. e. fuerteventuræ* Polatzek to be synonymous. In this latter conclusion I do not agree with him, for one reason Polatzek notes that *U. e. fuerteventuræ* is a large bird, while *U. e. pulchra* is said to be "short-winged."

It will be seen therefore that both Polatzek and von Thanner believe that the bird, which undoubtedly breeds in the winter months in Fuerteventura and on the coasts of Gran Canaria and Tenerife, is separable from the typical race.

A careful survey of the material before me led me at first to believe that Polatzek and von Thanner were right in this deduction. At first sight there certainly appeared to be two forms represented. Out of 20 birds collected in Tenerife, Gran Canaria, and the eastern islands in February, March, April, and May, eight specimens had the plumage of the upper parts distinctly more vinaceous than the remainder, with bills measuring 52–62 mm., collected in the same islands in the same four months of the year. The remaining twelve examples are much "duller" in general colouring, and their bills measure 52–60 mm., but the average length is distinctly shorter than in the first eight bright-coloured birds. Now is it possible that two perfectly distinct forms of *Upupa* should be found side by side in the same four islands at the same time of year, both of which breed in the islands, and in the eastern group at any rate are found living under exactly the same conditions? Personally, I do not consider it possible, and until very much more convincing arguments are forthcoming in favour of two distinct races in the Archipelago, I prefer to class all the Hoopoes under the one head—*Upupa epops epops* Linn. The bright colouring of the plumage exhibited in certain birds I consider to be largely seasonal. An examination of a large series of *U. e. epops* from other parts of the world shows that they are subject to great variation in colour as well as, to a certain extent, in the length of the bill, which latter discrepancy may possibly be accounted for by age. It would be interesting to learn the opinions on this subject of the several eminent foreign Ornithologists who have recently been working on the Avifauna of the Canary Islands.

The migrations of the Hoopoe in the Canary Archipelago are not very clearly understood, but it seems fairly evident that in the eastern islands some Hoopoes remain throughout the year [*] and undoubtedly breed in the winter months (*cf.* Polatzek, Orn. Jahrb. 1908, p. 166, form *a*, which he calls *U. e. fuerteventuræ*). These resident birds are reinforced by large numbers from the African mainland in the spring. Polatzek has himself seen migrants arriving on the 29th March, but considers them to be a distinct race which, however, he does not name. These migrants I consider were *U. e. epops*, which in my opinion arrive in March and April, while the majority leave the islands in the autumn. A few remain through the winter, and owing to the mild climate on the low-lying eastern islands and on the coast of the mountainous western islands, breed in February and March.

Hoopoes were met with in every part of Fuerteventura and Lanzarote which we visited. They are almost the commonest birds to be seen, alike on the stony plains, in the villages, amongst cactus plantations, in the tamarisk valleys, in the hills, or on the coast.

In Graciosa, only one bird was seen, as also in Allegranza; both these were very wild—in this respect unlike those generally met with on the large islands, which showed no sign of fear.

We did not find any Hoopoes on Montaña Clara.

A nest, which was found on May the 15th at Antigua (Fuerteventura), contained five half-fledged young, between the largest and smallest of which an enormous difference in size existed. We kept them alive for some time and found that they throve well on roasted gofio, and later on butterflies and caterpillars, which they ate greedily. I regret that they died one by one about a week after their return to Gran Canaria; they had meanwhile become exceedingly tame. This family is now in the British Museum.

A series was obtained from Fuerteventura and Lanzarote.

Bill dark horn; iris dark hazel; feet greyish brown.

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[*] Von Thanner considers that the majority of winter-breeding birds leave the islands after nesting is finished. Polatzek, on the contrary, thought that this winter-breeding bird was resident, at any rate in the eastern group.

Tyto flammea gracilirostris. Slender-billed Barn-Owl.

Tyto f. gracilirostris Hartert ; Bannerman, Part I. pp. 61, 62, 84, 86.

The Eastern Canary Island Barn-Owl is an exceedingly rare species found on the islands of Fuerteventura, Lanzarote, and Alleganza.

The example from the last-named island is very dark in colouring, but in other respects is similar to those from the main islands, and it must be remembered that considerable variation in colour exists individually amongst the whole group of *Tyto flammea*. It is always a difficult question to determine how plentiful or otherwise birds such as this may be. Nocturnal species are usually credited with being "very rare" on account of their being so seldom met with in broad daylight! In the case of this particular species, however, I believe the report to be correct. In every village which we passed through I made diligent enquiries after Owls. The islanders all appeared to know the "Lechusa," as this species is called, but one and all affirmed that it was now much scarcer than in former years.

Specimens were obtained from Lanzarote and Alleganza.

Bill light horn-colour; iris black; feet dark buff, claws black.

Falco peregrinus pelegrinoides. Barbary Falcon.

Falco p. pelegrinoides Temm ; Bannerman, Part I. pp. 58, 61, 62, 77, 78, 82, ? 83.

Falco peregrinus pelegrinoides, Hartert, Vög. pal. Faun. ii. p. 1051.

This grand bird—the *Falco barbarus* of former writers on the Canaries—was not seen until we reached Montaña Clara. On this little island a pair was resident, and the birds were seen on several occasions (*vide* Part I. pp. 77–78). I again saw a single bird on the Roque del Oueste, which, however, was probably one of the pair from Montaña Clara. On my return journey through Lanzarote I procured a fine specimen which had been shot while chasing the tame pigeons in the little township of San Miguel de Teguise, situated in the heart of the island.

An example was obtained from Lanzarote.

The soft parts were faded.

Falco eleonoræ. Eleonore Falcon.

Falco eleonoræ Gené; Bannerman, Part I. pp. 55, 56, 61, 62, 89.

This bird was seen on two or three occasions during the trip. It was first noted in Lanzarote, where I obtained a fine example of an adult male which had been shot near Arrecife. It was probably a Falcon of this species which was seen twice on the way from Tiñosa to Yaiza. It is not a common bird but, according to Polatzek, at certain seasons of the year and in certain localities, it is sometimes fairly plentiful. I had a good view of one of these Falcons in the barranco of Gran Tarajal in Fuerteventura. June seems a very early month in which to find this Falcon in the Canary Islands. It is a regular migrant in August and September. Von Thanner records it as breeding on the Roque del Este. Certainly it was not this species which I saw on Montaña Clara, but *F. p. pelegrinoides*. Very probably both species frequent this deserted island.

An example was obtained in Lanzarote.

Tinnunculus tinnunculus dacotiæ. Fuerteventuran Kestrel.

Tinnunculus t. dacotiæ (Hartert); Bannerman, Part I. pp. 43, 49, 50, 53, 55, 56, 57, 61, 65, 78, 82, 86, 87, 88.

Falco tinnunculus dacotiæ Hartert, Vög. pal. Faun. ii. 1913, p. 1086.

Dr. Hartert recently described this Kestrel in his book on the 'Birds of the Palæarctic Fauna.' It may be as well to give here a short summary of the characters which distinguish *T. t. dacotiæ* from *T. t. canariensis*.

In a series of 14 birds from the eastern Canary Islands (7 ♂, 7 ♀) compared with 14 birds from the western group (8 ♂, 6 ♀) we see that the adult males of *T. t. dacotiæ* have the spots on the mantle and wing-coverts smaller than in male examples of *T. t. canariensis*, while in the latter species the spots almost appear as bars. In comparing females of the two races we find that *T. t. canariensis* is considerably more heavily barred on the entire upper parts and has a generally darker appearance than *T. t. dacotiæ*. In size *T. t. dacotiæ* is smaller, as can be seen by the appended wing-measurements :—

T. t. dacotiæ.	*T. t. canariensis.*	*T. t. dacotiæ.*	*T. t. canariensis.*
♂.	♂.	♀.	♀.
226 mm.	234 mm.	228 mm.	235 mm.
223 ,,	223 ,,	235 ,,	243 ,,
215 ,,	221 ,,	233 ,,	236 ,,
215 ,,	224 ,,	228 ,,	237 ,,
218 ,,	226 ,,	223 ,,	244 ,,
224 ,,	223 ,,	231 ,,	232 ,,
221 ,,	222 ,,	225 ,,	
	234 ,,		

I had myself collected a large series in the eastern islands, as I had suspected before leaving England that the form found in the desert eastern group could be separated from that found in the western islands. That my supposition was correct is proved by my finding on my return that Dr. Hartert had already described and named this geographical race, while engaged upon working through the Kestrels of the Palæarctic region for his book. The characters assigned to this subspecies are fully borne out by the series which I procured. While in the eastern Canary Islands I paid special attention to immature birds, and managed to secure examples of this Kestrel in almost every plumage, from the nestling in down to the fully adult bird. It is impossible to give a full description of the various phases of plumage which the young bird passes through, but it is evident that the down is cast last of all from the inner wing coverts and from the crown of the head. Anyone desiring further information on this point can examine the birds themselves, of which a complete set are now to be found in the National Collection.

The following immature specimens were procured:—

(*a*) 1 nestling in down, taken at La Peña (Fuerteventura) on May the 11th.

(*b*) 3 nestlings in down, taken on Isla Graciosa on June the 7th.

(*c*) 3 juv. partly in down, taken at Haria (Lanzarote), on June the 15th.

(*d*) 1 juv. in a still further advanced stage, taken at La Peña (Fuerteventura) on May the 12th.

The Fuerteventuran Kestrel is not confined to the island after which it has been named, but was met with in every one of the eastern group which we visited, even being seen on the Roque Infierno or West Rock. In Fuerteventura it is not really a very plentiful species, and in comparison with the numbers of *T. t. canariensis* in Gran Canaria, where it simply swarms, it may be termed almost scarce. It is, however, seen in or near almost every village, and a clump of palm trees is almost sure to attract one or more pairs. I therefore came to the conclusion that it was regularly but sparingly distributed over the island. Almost all the birds met with in Fuerteventura were rearing young at the time of my visit, and in consequence I only shot two adult examples there which I had reason to believe had finished breeding.

In Lanzarote, curiously enough, these Kestrels were much more abundant. The increase in their numbers was most apparent, and many young birds were seen on the wing. In the desolate country between Yaiza and the coast many Kestrels were noted, and they were equally plentiful in the cultivated district round Uga. We did not find them in anything like the numbers in which Kestrels appear in Gran Canaria until we reached the valley of Haria. Here for the first time they were really plentiful—as Hawks go—and on one occasion I watched nine birds hovering over a single field.

On the island of Graciosa Kestrels were fairly numerous—they breed on the western coast. On Montaña Clara only a very few were noticed, but on Allegranza they were quite common and are evidently resident there.

A large series was obtained from Fuerteventura, Lanzarote, Graciosa, and Allegranza.

Adult. Bill bluish horn, cere pale yellow; iris dark hazel; feet chrome yellow.

Juv. Bill pale bluish horn; iris dark hazel; feet pale yellow, claws black.

Buteo buteo insularum. Canarian Buzzard.

Buteo b. insularum Floericke; Bannerman, Part I. pp. 50, 60, 65, 84, 86.

Buteo buteo lanzaroteæ Polatzek, Orn. Jahrb. 1908, p. 113.

The Buzzard from the eastern Canary Islands has been distinguished by Polatzek as *B. b. lanzaroteæ.* I have not myself compared a large series of adult birds from the eastern and western groups of the Canary Archipelago. Dr. Hartert, who has recently reviewed the Palæarctic forms, tells me that he does not consider the Buzzard found in the eastern Canary Islands can be separated from *Buteo b. insularum,* the race inhabiting the western islands.

The Buzzard is an exceedingly rare bird in Fuerteventura judging from my own experience, for in the course of the entire journey through this island it was only seen on one occasion—in a barranco between La Peña and Santa Maria de Betancuria. Both Polatzek and von Thanner found it scarce in Fuerteventura. In traversing Lanzarote from the south to the extreme north (see Map of Route, Part I. Plate II.) I did not meet with it until I reached the valley of Haria, where, however, one or two pairs were constantly in sight during the five days spent there.

The little island of Graciosa is now quite forsaken by the Buzzards, which Meade-Waldo found there in April, 1890. None were discovered on Montaña Clara, but on Allegranza it is interesting to note that three or four were seen in one crater, being doubtless resident in the island.

An immature example was procured in Allegranza.

Bill black, cere greenish yellow; iris light hazel; feet yellow.

Neophron percnopterus. Egyptian Vulture.

Neophron percnopterus (Linn.); Bannerman, Part I. pp. 44, 50, 56, 58, 61, 66, 78, 87, 89.

The Egyptian Vulture is not nearly so plentiful in the eastern group of the Canary Islands as it is in Gran Canaria or Tenerife. In Fuerteventura and Lanzarote it was sparingly distributed throughout both islands — by "sparingly" I mean that it would be unusual to see more than two or three pairs in a day's march, while in Gran Canaria it is seldom indeed that two or more birds are not constantly in sight wherever one may happen to travel.

In Graciosa a single bird used to haunt the largest crater. I do not believe that any breed there, the precipitous cliffs known as "El Risco," on the adjoining island of Lanzarote, proving far more attractive to their requirements.

In Montaña Clara a pair certainly appeared to be resident, on which island the birds had plenty of opportunities of choosing a suitable nesting-site where they would be undisturbed.

The island of Allegranza also possessed a single pair of these Vultures at the time of our visit.

An immature bird was obtained in Fuerteventura.

Bill pale horn-colour; iris dark hazel; feet dirty flesh-colour; head and neck pale chrome.

Pandion haliaëtus haliaëtus. Osprey.

Pandion h. haliaëtus (Linn.); Bannerman, Part I. pp. 61, 66, 78, 82, 86.

The Osprey is often seen round the coasts of all the eastern islands. It breeds in all the members of this group with the possible exception of Graciosa, where, however, it has been known to nest, although there are no high cliffs in this island. A pair was resident on Montaña Clara, and we watched their marvellous evolutions every day. This pair is said to nest on the north-west cliffs of the island (*vide* Part I. Plate III. fig. 2).

When I landed on the West Rock two Ospreys sailed out from a crevice overhead, but I could not find any remains of a nest on this wave-lashed heap of lava.

In Allegranza the Osprey is resident and breeds on one of the smaller volcanoes.

No specimens were procured.

Ardea cinerea. Common Heron.

Ardea cinerea Linn.; Bannerman, Part I. pp. 46, 87.

The Common Heron is resident in the Canary Islands, but I do not know whether it breeds anywhere in the eastern group as undoubtedly it does in some of the western islands. I only met with this bird on one occasion, when I surprised a Heron feeding on the reefs at Toston in Fuerteventura. Herons are recorded from both the larger islands.

A single bird was observed on Allegranza.

No specimens were procured.

Phœnicopterus roseus. Flamingo.

Phœnicopterus roseus (Pall.); Bannerman, Part I. p. 57.

The Flamingo has almost certainly visited the island of Lanzarote, for the native fishermen living near the Lago Januvio described to me a bird which could only have belonged to this species. Meade-Waldo saw the undoubted remains of one of these birds in the eastern Canary Islands. Other interesting Waders which have occurred in Lanzarote, but which I could hardly hope to meet with in so hurried a journey, are *Platalea l. leucorodia*, *Machetes pugnax*, *Himantopus himantopus*, *Recurvirostra avosetta*, *Limosa limosa*, and *Limosa l. lapponica*, stuffed examples of which were seen in a private collection of Lanzarote birds at Arrecife (*vide* Part I. pp. 62–63).

No specimens were procured.

Thalassidroma pelagica. Storm Petrel.

Thalassidroma pelagica (Linn.); Bannerman, Part I. p. 78.

A Storm Petrel was taken by one of my boatmen in a cave in Montaña Clara on the 9th of June. This is the first record of *T. pelagica* being taken *on land* in the Canary Archipelago. The testes of this specimen were very large, and it appears highly probable that the bird had come ashore to breed. The local name of the Storm Petrel is "Alma Mestre," which probably equally applies to any of the small members of this family. For a further account see reference given above.

The Rev. F. Jourdain has drawn my attention to the fact that there are three eggs in the British Museum from the Tristram collection which were obtained on the "Desertas," off Madeira in the year 1849, probably taken by Dr. Frere. Mr. Jourdain rightly remarks that this is a highly interesting and little-known extension of the recognised breeding-range of this Petrel, and this fact lends colour to my theory that *T. pelagica* was breeding on Montaña Clara.

An example was obtained from Montaña Clara.

Bill black; iris dark hazel; feet black.

Puffinus assimilis baroli. Little Dusky Shearwater.

Puffinus assimilis baroli Bonap.; Bannerman, Part I. pp. 64, 66, 79, 87.

Puffinus baroli Bonaparte, Consp. Gen. Av. 1856, p. 204.

Puffinus obscurus Gm.; Ogilvie-Grant, Ibis, 1890, p. 444.

Puffinus assimilis Gould; Ogilvie-Grant, Ibis, 1896, p. 50; Boyd Alexander, Ibis, 1898, p. 98.

Puffinus obscurus bailloni Bonap.; Rothschild & Hartert, Nov. Zool. vi. 1899, p. 196.

Puffinus bailloni Bonap.; Godman, Mon. Petrels, 1908, p. 138.

Puffinus godmani Allen, Auk, 1908, p. 339.

Puffinus obscurus atlanticus Rothschild & Hartert, Bull. B. O. C. xxvii. 1911, p. 43.

Puffinus assimilis baroli Bonap.; Mathews, Birds of Australia, vol. ii. 1912, p. 54.

Considerable confusion has taken place over the name of the Little Dusky Shearwater inhabiting the Canary Island seas. Old writers on the birds of the Canary Islands, such as Webb and Berthelot ('Ornithologie Canarienne,' 1841), Bolle (J. f. O. 1855), and later Godman (Ibis, 1872, p. 223), Savile Reid (Ibis, 1888, p. 80), and Meade-Waldo (Ibis, 1890, p. 437; 1893, p. 207) all used for this Shearwater the name of *Puffinus obscurus*, but *P. obscurus* Gm., according to Godman, ranges from the islands of the Pacific Ocean to the Mascarene Islands, and therefore cannot be used for the Atlantic form of this Shearwater.

In 'The Ibis' for 1890, Ogilvie-Grant, writing on the birds obtained at Madeira, Deserta Grande, and Porto Santo, again refers to this Shearwater as *Puffinus obscurus*, although he corrects this statement later in 'The Ibis' for 1896, p. 50, where this and the bird from the Salvage Islands is said to be *Puffinus assimilis* Gould. In this decision he is followed by Boyd Alexander, who designates *Puffinus assimilis* as breeding in the Cape Verde Islands (Ibis, 1898, p. 98). Rothschild and Hartert pointed out (Nov. Zool. 1899, vi. p. 196), that the birds from Madeira are *not* the same as *P. o. assimilis* from the Australian and New Zealand Seas. They therefore adopted (with reserve) the name *Puffinus obscurus bailloni* Bonap., noting, however, that perhaps this Shearwater of the Atlantides required to be renamed. Hartert, however, keeps up this name in the Nov. Zool. 1901, p. 332, and 1905, p. 99.

Godman, in the 'Monograph of the Petrels,' 1908, p. 138, follows Rothschild and Hartert in calling this species *Puffinus bailloni*, but points out that the name *bailloni* was given by Bonaparte to a bird from *Mauritius* ("Isle de France") and therefore becomes synonymous with *Puffinus obscurus* Gm. He does not, however, give a new name to the north-east Atlantic form.

Allen, reviewing Godman's 'Monograph of the Petrels' (Auk, 1908, p. 339), seeing that Godman had noted the differences between the Madeiran and Mauritius Shearwater, named the former *Puffinus godmani* without seeing the specimens. Rothschild and Hartert, having discovered that the north Atlantic bird differed from that from the Seychelles, came back to the question and, ignorant of Allen's action, named the north-east Atlantic bird *Puffinus obscurus* *atlanticus* (Bull. B. O. C. xxvii. 1911, p. 43). Recently Mathews, writing on *Puffinus assimilis assimilis* ('Birds of Australia,' vol. ii. p. 54), has shown that Bonaparte named the Shearwater from Madeira and the Canary Islands *Puffinus baroli* (Compt. Rend. xlii. 1856, p. 769; id. Consp. Av. 1856, ii. p. 204) and has thus cleared up the matter satisfactorily*.

Very few *adult* specimens of this Shearwater from the Canary Islands are to be found in collections. It is not therefore possible to critically compare it with examples from the type locality. It has recently been shown that the birds from the Cape Verde Islands are distinct, and it will be interesting to compare a series from the Canary Islands, when such is available, with a series from Madeira.

During the Expedition the Little Dusky Shearwater was met with for the first time on the island of Montaña Clara. A complete account of this bird is given in Part I. of this paper (p. 79).

A series of nestlings was obtained illustrating the way in which the down is cast as the bird advances in age. This was the only island upon which we found them. They are known to the natives by the name of "Tahoce."

A series of this Shearwater was obtained from Montaña Clara.

Bill lead-colour, culmen black; iris dark hazel; back of tarsus, outer toe, and sole black; two inner toes and webs livid flesh-colour, more dusky on the webs.

Two eggs only were procured on the 8th of June.

In comparison with the egg laid by *Bulweria bulweri* that of *P. a. baroli* is decidedly large for the size of the bird.

In colour it is white with practically no gloss; the two eggs measure 48·5 × 33 5 and 49 × 34 mm.

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* While on this subject it may be as well to point out that the birds obtained in the Cape Verde Islands by Boyd Alexander (*vide supra*) are *not* of the same species as the Madeira and Canary Island form. Mathews ('Birds of Australia,' vol. ii. p. 70) has named this Shearwater *Puffinus lherminieri boydi.*

Puffinus kuhli flavirostris. Yellow-billed Shearwater.

Puffinus k. flavirostris (Gould); Bannerman, Part I. pp. 61, 64, 66, 67, 68, 69, 70, 80, 82, 84, 87, et Bull. B. O. C. xxxiii. 1913, pp. 56–57.

A very large series of this Shearwater was obtained, all adult breeding birds. The differences which exist between this and the Mediterranean form *P. k. kuhli* have been clearly set forth by Dr. Hartert and Mr. Ogilvie-Grant (Nov. Zool. 1905, p. 97), and need not be enlarged upon. The following points in the series which I obtained are worthy of note:—It has already been remarked that the sex of this Shearwater can be accurately told when the bird is alive by the size of the bill and tarsus. The following measurements give the relative length of 25 male and 15 female examples:—

Bill, ♂ 53–57 mm.
,, ♀ 50–53·5 (many beaks measure 53 mm., but one example has an abnormally long bill of 55 mm.).
Tarsus, ♂ 56–58·5 mm.
,, ♀ 51–54·5 mm.
Wing, ♂ 337–374 mm.
,, ♀ 344–367 mm.

But more important than the actual length is the relative build of the bill and tarsus, that of the male being much heavier and stouter than that of the female.

For a complete account of the nesting habits, distribution, etc., of this species in the eastern Canary Islands see Part I. p. 66.

The Yellow-billed Shearwater swarmed on all the smaller islets and rocks of the eastern group, but was particularly numerous on Graciosa and Montaña Clara. It also nests, according to the natives, at the foot of El Risco in Lanzarote, but I did not have an opportunity of verifying this statement. In Fuerteventura Polatzek found it breeding "in a crater near the mountains of Oliva about eight kilometres from the sea-coast"; the same observer records a nesting colony "within an hour's journey to the north-west of Yaiza," in Lanzarote.

There is also a large colony on the island of Lobos. The natives call this Shearwater "Pardela."

A large series of birds was obtained from the islands of Graciosa, Montaña Clara, Roque del Oueste, and Allegranza. A description of each of these islands with their various nesting colonies is given in Part I.

Bill pale yellowish horn-colour; iris dark hazel; feet pale flesh-colour, outer toe and webs dusky.

A series of 53 eggs was obtained from the four islands mentioned above between May 28 and June 14.

As this large series offers exceptional opportunities for comparison with the egg of *P. kuhli kuhli*, I have given detailed measurements. When first laid they are pure white in colour; a great variety of shapes are exhibited in the series.

79 × 51, 69·5 × 47, 75 × 46, 78 × 49·5, 75 × 51, 70 × 47·5, 72 × 51, 76 × 50, 72·5 × 50·5, 75 × 49·5, 73·5 × 51, 73 × 52·5, 69·5 × 51, 74 × 50·5, 75 × 50, 70 × 48, 66 × 47, 75·5 × 49, 81 × 48, 77 × 50, 75 × 50, 78·5 × 47, 79 × 50·5, 69 × 49, 82 × 50·5, 78 × 49, 77·5 × 49, 70 × 50, 74 × 49, 75 × 51, 73·5 × 53, 77·5 × 51, 77·5 × 50, 83 × 48, 76 × 48, 73 × 50, 78 × 48, 71 × 49·5, 77 × 47·5, 75 × 49, 74 × 50, 74·5 × 51, 73·5 × 51, 70·5 × 49·5, 74·5 × 47, 78·5 × 50 mm.

Bulweria bulweri. Bulwer's Petrel.

Bulweria bulweri (Jard. & Selby); Bannerman, Part I. pp. 74, 80.

A fine series of adult birds was obtained. It is not possible in the case of this species to tell the sex of the bird from external appearances, as is the case with *P. k. flavirostris*. The most important measurements of the specimens which I obtained are as follows:—

Bill,	♂ 20·5–23	mm.	(exposed part of culmen).	22 birds examined.
,,	♀ 20·5–21	,,	,, ,,	4 ,, ,,
Tarsus,	♂ 25·5–28	,,		22 ,, ,,
,,	♀ 26·5–27·5	,,		4 ,, ,,
Wing,	♂ 187–205	,,	(average of 24 birds—196·5 mm.).	
,,	♀ 191–200	,,	(average 195·5 mm.).	

Bulwer's Petrel resorts in the eastern Canary group to the little island of Montaña Clara to breed (Ibis, 1914, p. 80).

We did not discover it on any of the other outlying islets visited. Notes on the habits of this Petrel are given in Part I. (*vide supra*).

A large series of birds was procured from Montaña Clara.

Bill black; iris dark hazel; feet pale flesh-colour, outer toe and webs dusky.

Eighteen eggs were obtained, pure white in colour with an unglossed surface.

The measurements of 14 of this series are: 45·5 × 33, 42 × 30·5, 44 × 31, 43 × 30, 43 × 32·5, 44 × 31·5, 41·5 × 30, 41·5 × 28·5, 41·5 × 31, 42 × 31, 43 × 31, 42 × 30, 43 × 30·5, 42 × 31 mm.

Puffinus puffinus puffinus (Brünn.). The Manx Shearwater.

Bannerman, Part I. p. 85.

Pelagodroma marina hypoleuca (Webb & Berth.). The North Atlantic Frigate Petrel.

Bannerman, Part I. p. 83.

Oceanodroma castro (Harcourt). The Madeiran Petrel.

Bannerman, Part I. p. 85.

Oceanodroma leucorrhoa (Vieill.). Leach's Fork-tailed Petrel.

Although all of the above species are from time to time found in the Canary Island seas, not one of them was met with during the Expedition. In the first part of this paper (for pages see above) I discussed the likelihood of the first three of the above species ever having bred in the Canary Archipelago. I am of opinion that *Puffinus p. puffinus* has ceased to breed in the group, or rather that we cannot now consider it to be a breeding bird until fresh satisfactory evidence is forthcoming.

There is no evidence whatsoever that *Pelagodroma m. hypoleuca* or *Oceanodroma castro* has ever been known to breed on any of the Canary Islands proper. (Both species breed on the Salvage Islands, distant 100 miles from the nearest point.)

As to *Oceanodroma leucorrhoa* (Vieill.), we are told by

Herr von Thanner (Orn. Jahrb., 1913, p. 193) that *Thalassidroma leucorrhoa* (Vieill.), the "Alma mestre," *according to the fishermen* (italics mine) breeds especially on Montaña Clara.

Now unless Herr von Thanner has definite proof in the shape of specimens or eggs, which apparently he has not, that the bird in question *is* undoubtedly *O. leucorrhoa*, we must not accept the statement of the fishermen. It is very unlikely, although they are often excellent observers, that the fishermen distinguish between such species as *O. leucorrhoa, O. oceanicus, O. castro*, etc. As a matter of fact, during my stay of seven days on Montaña Clara we did not discover a single specimen of *O. leucorrhoa.* One of my fishermen, however, captured in a cave a small Petrel which he brought to me and called the "Alma mestre" (the same nickname used for *O. leucorrhoa* by Herr von Thanner). This bird was the Common Storm Petrel (*Thalassidroma pelagica* Linn.), which surely proves that the statements of the fisher folk must be carefully verified before being put into print.

Podiceps nigricollis nigricollis. Black-necked Grebe.

Podiceps n. nigricollis Brehm ; Bannerman, Part I. p. 57.

While encamped on the shores of the Lago Januvio in Lanzarote, a small flock of Black-necked Grebes visited the lake. They did not remain for long, and none were obtained. A rare migrant to the Canary Islands, very few records of this species are forthcoming. This species has a very wide range extending throughout Africa, so that it is not surprising that it should occasionally visit the Atlantic islands. Records have even been made of its visiting the Azores.

No specimens were obtained.

Columba livia canariensis, subsp. nov. Canarian Rock-Dove.

Columba livia livia Gmelin ; Bannerman, Part I. pp. 46, 71, 81, 87, 89.

An examination of a series of Rock-Doves from the Canary Islands has convinced me that we can no longer unite them with *Columba livia livia*, with which up till now they have been considered identical. In fact, it will be noted that in Part I. of this paper I referred to the Rock-Dove as *C. livia* throughout. I had not then had time to examine the material which is now available, and which has induced me to alter my opinion since I wrote on the Birds of Gran Canaria.

As Rock-Doves more than most birds are susceptible to "wear and tear," it is necessary to have a complete series to deal with; moreover, all over the world they are inclined to mate with domestic "fancy" Pigeons and thus bring in a hybrid strain which eventually ruins the pure breed. This has undoubtedly occurred in the Azores, where a very remarkable race of Rock-Dove is to be found. In the Canary Islands, however, we have a bird, which although showing marked differences from the typical race, does not exhibit any trace of "crossing," and which is remarkably constant in the characters which I have assigned to it. The main differences, which at once catch the eye, are that the Canarian form is decidedly darker than Rock-Doves from Europe or northern Africa, that they are smaller in size than *C. livia livia*, and that they have not the pure white lower back which is so conspicuous a feature in typical examples of the Rock-Dove.

I therefore propose to name the Canarian race *Columba livia canariensis*, subsp. nov.

Type ♀. Cueva de las Ninas, Pinar Pajonal, Gran Canaria, 24.i.10. [Coll. D. A. Bannerman.]

Culmen 21·5, wing 206, tarsus 29 mm.

Habitat. All the islands of the Canary Archipelago.

Columba l. canariensis differs from *Columba l. livia* in having

1. The colour of the plumage darker throughout; practically no variation is shown in a series of twelve examples.
2. The feathers of the rump light grey; a certain amount of variation takes place, but *C. l. canariensis* never exhibits the broad white rump of typical examples of *C. l. livia*.

3. The size is smaller. In 12 specimens the wing-measurements vary from 200–220 mm., and in 13 examples of *C. l. livia* from the British Islands and southern Europe the wings measure from 217–232 mm.

(When *alive* the birds strike one throughout as being a distinctly smaller race.)

As already mentioned, there is no trace of hybridism in birds from the Canary Islands, and they appear to be a perfectly definable race, of which the characters noted are always constant. *C. l. canariensis* is in my opinion more closely allied to *C. l. schimperi* than to *C. l. livia.*

Columba l. canariensis differs from *C. l. schimperi* from north Africa, south Arabia, and Nubia in having

1. The general colour throughout decidedly darker.
2. The lower back light grey instead of slate-grey.

In size the two subspecies are similar.

Seven birds from the above localities have wing measurements of 198–221 mm.

Specimens from Palestine, *Columba l. palestinæ* Zedlitz, have the light upper parts of *C. l. schimperi* but have the lower back *white*, and in size they are apparently slightly smaller.

Mr. Stuart Baker ('Indian Pigeons and Doves,' p. 131) believes that the Indian Blue Rock Pigeon (*Columba livia intermedia*) extends through Persia, Arabia, Egypt and northern Africa as far west as Tunis, and he does not recognise *C. l. schimperi* Bonap. or *C. l. palestinæ* Zedlitz. In these conclusions I do not agree with him, as I certainly consider the light north African form is a perfectly distinct subspecies. I have only a few examples from Palestine, but these appear to bear out the characters assigned to this subspecies.

Rock-Doves are found in all the eastern islands of the group; they were generally met with in the region of the coast but in much smaller numbers than in Gran Canaria, where they abound.

In Fuerteventura we first found them inhabiting the sea-cliffs at Toston, where they would come in to roost in the evenings, spending the day on the miserable patches of corn. In the cliffs which fringe the shore from Toston to La Peña hundreds of these birds breed. As in Gran Canaria, they also frequent caves in the interior. In a casual journey across the island very few are met with. The same state of things exists in Lanzarote; their stronghold in this island is the steep precipice, 1500–2000 feet in height, bordering the coast from Monte Famara to Punta Fariones. I did not discover any exceptionally large inland resorts, but doubtless some exist in remote parts of the island. In Graciosa several pairs lived amongst the sand-hills in the north of the island, while on Montaña Clara and Allegranza a very few were noted. In the former island they are evidently considerably harried by the Peregrine Falcons.

A small series was obtained from Fuerteventura, Lanzarote, and Graciosa.

Bill dark horn-colour; iris dark orange-yellow; feet crimson.

Streptopelia turtur turtur. Turtle Dove.

Streptopelia t. turtur (Linn.); Bannerman, Part I. pp. 48, 60.

Summer migrants to the Canary Islands, Turtle Doves were found breeding very plentifully in the fertile barranco de la Peña. They are doubtless found in all such places where there is water and where palm trees and tamarisks are found in which to nest. With the exception of Gran Tarajal this was the only place of the kind which I came across in Fuerteventura, and consequently was the only occasion on which I met with the bird in this island. A nest was found on May the 11th, in La Peña barranco, built in a low tamarisk; it contained two fresh eggs, which measure 30 × 22 mm.

In Lanzarote none were seen until we reached Haria, when a pair of nestlings were brought to me from a neighbouring village. I did not see any Turtle Doves in the south of Lanzarote, where I expected to meet with them in the cultivated districts of Yaiza and Uga. If they breed there they are by no means common.

A small series was obtained from Fuerteventura and Lanzarote.

Bill dark horn-colour; iris dark yellow, eyelids reddish; feet crimson.

Note.—It will be noted that the Turtle Doves from the eastern Canary Islands which I found breeding in the barranco de la Peña belong to the typical form *Streptopelia turtur turtur*. While in Gran Canaria I shot, on May the 5th, amongst examples of the above, a single specimen of the Pale Turtle Dove, **Streptopelia turtur arenicola** Hartert, Nov. Zool. i. 1894, p. 42.

This subspecies is found in north-west Africa, and was the only form met with by Dr. Hartert during his recent journey in the Sahara, *vide* Nov. Zool. xviii. 1911, p. 543. The type was originally described from Fao on the Persian Gulf, and its occurrence in the Canary Islands is of special interest.

Pterocles arenarius. Black-bellied Sand-Grouse.

Pterocles arenarius (Pall.); Bannerman, Part I. pp. 43, 49, 51, 52, 54, 88, and 89.

The Sand-Grouse is particularly numerous on the extensive plains above Puerto Cabras, where large numbers were seen. A description of the way in which these sporting birds are shot at their drinking-places is given in Part I. p. 54. In the north of Fuerteventura, where they appear to be very rare, we only met with one small flock between Oliva and Toston; they again became plentiful when the central plains were reached. In the actual neighbourhood of Antigua they did not appear to be as common as they are said to be further south.

None were seen in Lanzarote, and I do not believe the bird is resident in this island; it is entirely absent from the smaller islets.

A small series was obtained from Fuerteventura.

Bill whitish horn-colour; iris almost black; feet greenish brown, scales dirty white.

Two clutches of eggs were obtained : a marked difference existed between them, the one having a totally different ground-colour and markings from the other. Both were obtained in Fuerteventura.

Clutch A. Two eggs brought into camp by boys at Antigua, 15. v. 13.

Clutch B. Two eggs said to have been taken at Tuineje in June ; these contained well-developed chicks.

In clutch A the ground-colour is very pale coffee-colour, the general effect showing a yellowish tinge ; the overlying markings may be described as ill-defined suffused blotches of yellowish-brown and umber-brown. One egg in particular is more heavily marked than the other ; there seems to be no tendency for the markings, which are evenly distributed over the shell, to be gathered round the poles.

In clutch B the ground-colour is creamy white in one egg, pale buff in the other ; each is spotted and speckled unevenly with umber-brown and pale rufous with underlying blotches of stone-colour. In this clutch, as in the former, one egg is more heavily marked than the other.

Measurements of the four eggs are :—48 × 32·5, 44·5 × 34, 49·5 × 32, 46·5 × 30·5 mm.

Œdicnemus œdicnemus insularum. Eastern Canary Islands' Thick-knee.

Œdicnemus œ. insularum Sassi, Orn. Jahrb. 1908, p. 32 ; Bannerman, Part I. pp. 44, 58, 61, 71, 84, 87, 89.

When engaged in working out a collection of birds from Gran Canaria I was unable to identify specimens from that island and from Tenerife with Dr. Sassi's description of *Œ. œ. insularum.* During my recent expedition I collected a series of ten birds from the islands of Fuerteventura, Lanzarote, Graciosa, and Allegranza. On comparing this series with examples from the western islands, I saw at once that they were different and that *Œ œ. insularum* Sassi must be upheld.

The ten examples of *Œ. œ. insularum* which I obtained in the islands mentioned, when compared with typical *Œ. œ.*

œdicnemus, are all slightly more sandy rufescent in the colour of the upper parts; they are also more heavily streaked on the underparts, but the most pronounced difference is in the size, the wing-measurements varying from 220–232 mm. as against wing-measurements in eight British killed specimens of *Œ. œ. œdicnemus* of 233–250 mm.

Upon examining a series of Thick-knees from the western group it was noticeable that birds from these islands show a marked difference from *Œ. œ. insularum* as well as from *Œ. œ. œdicnemus*.

From *Œ. œ. insularum* they are distinguished by

1. Having the upper parts much darker.
2. By lacking the sandy rufescent tinge.
3. Being lighter on the underside.

From *Œ. œ. œdicnemus* they differ in being

1. Darker on the upper parts (the dark centres to the feathers being broader).
2. Lighter on the underparts (especially in birds from Gran Canaria).
3. Smaller in size.

In my paper on the Birds of Gran Canaria I gave a description of the Thick-knees which I obtained in this island and which were remarkable for their almost pure white underparts, the markings upon the breast and flanks being in consequence much bolder. Other differences are also noted ('Ibis,' 1912, p. 584)*. I therefore propose to name the form inhabiting the western Canary group, **Œdicnemus œdicnemus distinctus**, subsp. nov. Type in the British Museum: ♀ ad. Las Palmas, Gran Canaria, 12. ii. 12. [Coll. D. A. Bannerman.]

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* At the time when I wrote this paper I was very doubtful whether birds from Tenerife could be separated from *Œ. œ. œdicnemus*. A single bird shot in Tenerife in December 1887 appears to be very different from the rest of the series. It is very large in size, with a wing-measurement of 250 mm., and in colour is sandy-rufescent. It agrees exactly with examples of *Œdicnemus* in the British Museum from Egypt. Whether these are typical examples I am not prepared to say; those which I have examined are relatively larger and more rufescent in colouring than British-killed examples of the Thick-knee. It seems probable that the large bird shot in Tenerife by Mr. Meade-Waldo was a migrant from the mainland; it is not, however, *Œ. œ. saharæ*, but may be a central Saharan form (see remarks by Hartert, Nov. Zool. 1913, p. 68).

Thick-knees (*Œ. œ. insularum*) were met with in all the eastern Canary Islands visited with the exception of Montaña Clara and the East and West Rocks. They were quite common though more often heard than seen, and were breeding in all the islands.

A series was obtained from Fuerteventura, Lanzarote, Graciosa, and Allegranza.

The following clutches of eggs were taken of *Œ. œ. insularum* :—

1. Two eggs, Antigua, Fuerteventura, 15. v. 13.
2. Two eggs, Haria, Lanzarote, 26. v. 13.
3. Two eggs, Haria, Lanzarote, 26. v. 13.
4. One egg, Haria, Lanzarote. Obtained by a native ; no date.
5. Two eggs, Isla Graciosa ; one egg found 3. vi. 13, the other taken from oviduct of a female shot on same date.

The eggs, which in several cases are particularly handsome, vary much in size and markings, the ground-colour being either rich buff or greenish buff; in no case was an egg found having a very pale-coloured ground.

The measurements of eight of the above eggs are:—48 × 37, 48·5 × 36, 52 × 38, 35 × 35·5, 54 × 35, 48·5 × 37·5, 50 × 38, 53 × 38 mm.

Cursorius gallicus gallicus. Cream-coloured Courser.

Cursorius g. gallicus (Gmelin) ; Bannerman, Part I. pp. 43, 44, 45, 46, 51, 52, 54, 57, 89.

A series of immature examples was obtained which clearly show the phases of plumage which the Cream-coloured Courser passes through before assuming that of the adult. The first stage which the fully fledged young exhibit is shown by a bird shot on May the 20th, which was in company with its parents. This specimen has the feathers of the crown, entire upper parts, wing-coverts, scapulars, and rump barred with black. The black line running from behind the eye towards the nape, which is so marked a feature in the adult, is very short and narrow in the young. From above the eyes a broad isabelline band joins its fellow on the nape, which in the adult is pure white. Moreover, there is no trace of the bluish-grey hind-crown, and the underparts are a shade darker in colour than in the adult bird.

The next stage which is reached is seen in a bird (of an earlier brood), shot on May the 16th, which has begun to lose the bars on the feathers of the upper parts, and in consequence has a very patchy appearance. The principal change has taken place on the head, which is several shades lighter than in the younger bird. The black stripe from behind the eye is now more pronounced, and the broad isabelline band from above the eyes to the back of the nape has changed to white. The feathers of the hind-crown are becoming bluish-grey and the concealed black nape-patch is just appearing. The fore part of the crown still retains the speckled appearance of the young, but immediately in front of the grey hind-crown the sandy rufous feathers of the old bird have been assumed. The underparts are similar to the adult.

During my journey in Fuerteventura Coursers were not seen in the numbers which I had expected, but it must be remembered that I did not visit the large plain surrounding Tuineje in the south of the island, where they are said to be more numerous than elsewhere. They were met with on the plains above Puerto Cabras, between Oliva and Toston, and again in the neighbourhood of Antigua, but never in very large numbers.

In Lanzarote they were seen on only two occasions, in the desolate country near Januvio.

None were found on the smaller islets, but von Thanner saw a pair on Graciosa which had doubtless flown over from Lanzarote.

A small series was obtained from Fuerteventura and Lanzarote.

Bill dark horn-colour; iris dark hazel; feet creamy-white.

Two eggs were obtained which had been taken earlier in the year.

In colour they harmonize exactly with the ground upon which they are laid. The specimens obtained in no wise differ from the description given in the 'Catalogue of Eggs,' and measure 35 × 27 mm.

Glareola pratincola pratincola. Collared Pratincole.

Glareola p. pratincola (Linn.); Bannerman, Part I. pp. 58, 63.

The Collared Pratincole is an occasional wanderer to the shores of the Canary Islands. It is, however, a distinctly rare visitor, at any rate, to the western group. Meade-Waldo records only two during his sojourn in the islands. I am inclined to believe that it is of more regular occurrence in Fuerteventura and Lanzarote, which would naturally be the first land sighted. I met with a pair on the wide plain bounded by the sea outside the town of Arrecife. A very high wind was blowing at the time. Later I saw an example of this species in the possession of Snr. Don Gonzalez y Gonzalez of Arrecife which had been shot close to that town. Herr von Thanner records four of these birds as having been seen outside Arrecife on the 7th of May, 1913, one of which had been shot.

A pair was obtained from Lanzarote.

Bill dark horn-colour, gape orange-red; iris dark hazel; feet greenish brown.

Testes and ovary small. Crop contained beetles.

Hæmatopus niger meadewaldoi. Meade-Waldo's Black Oystercatcher.

Hæmatopus niger meadewaldoi Bannerman, Bull. B. O. C. xxxi. 1913, p. 33; Bannerman, Part I. pp. 45, 46, 71, Plate VI.

Hæmatopus niger Cuv.; Webb & Berthelot, Ornithologie Canarienne, 1841, p. 33.

Hæmatopus niger Temm.; Bolle, J. f. O. 1855, p. 175.

Hæmatopus moquini Bonap.; Bolle, J. f. O. 1857, p. 337; Godman, Ibis, 1872, p. 220; Kœnig, J. f. O. 1890, p. 297; Hartert, Nov. Zool. 1901, p. 332; Thanner, Orn. Jahrb. 1905, p. 64; 1908, p. 213; Polatzek, Orn. Jahrb. 1909, pp. 21, 208.

Hæmatopus capensis Licht.; Meade-Waldo, Ibis, 1889, pp. 13, 508; 1904, p. 437; 1893, p. 204.

Hæmatopus niger Meade-Waldo!; Thanner, Orn. Jahrb. 1913, p. 189.

As I have figured this Oystercatcher in the first part of this paper (Plate VI.), I have thought it advisable to include the short original description which appeared in the 'Bulletin of the British Ornithologists' Club,' especially as it has recently been misquoted in the 'Ornithologische Jahrbuch.'

"*Hæmatopus niger meadewaldoi* Bannerman.

"Similar to *H. niger niger* Temm., but decidedly smaller, particularly as regards the measurement of the wing, but with the culmen conspicuously longer and the tarsus more slender. The basal portion of the inner webs of the primaries is white, forming a large patch, partially concealed by the under wing-coverts. In *H. niger niger* there is scarcely any white at the base of the quills, though the primaries become lighter towards the base" *.

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* By referring to Plate VI. it will be seen that in the figure a faint wing-patch is visible, caused by the median portion of the outer webs of the primaries being whitish. At the time when I described this Oystercatcher I had only three birds in the brownish plumage to examine. I therefore hesitated to include this peculiar patch as a regular character. I have since procured myself an adult male example in the full glossy-black breeding-plumage, which is the specimen figured, and, as can be seen in the painting, the patch is most marked. I conclude, therefore, that it is a characteristic of the subspecies described and is not, as I at first believed, due to wear.

The following is a summary of the only four specimens in England :—

	Wing. mm.	Culmen. mm.	Tarsus. mm.
a. ♀ (type)	250	79	52
b. ♂	259	77	49·2
c. ♀	257	81	52
d. ♂ (figured)	262	72·5	54

a. E. Canary Is., 7. iv. 88, Coll. E. G. B. M.-W. Skin in the British Museum.

b. E. Canary Is., 6. iv. 90, Coll. E. G. B. M.-W. Skin in the Liverpool Museum.

c. E. Canary Is., 6. iv. 90, Coll. E. G. B. M.-W. Skin in the British Museum.

d. E. Canary Is., 1913, Coll. D. A. B. Skin in the Tring Museum.

The average measurements of the typical South African species, *H. niger niger*, are :—Wing : ♂ 285, ♀ 275 ; culmen : ♂ 69, ♀ 71 mm.

In all species of Oystercatcher the male has the culmen somewhat shorter than the female.

The occurrence of this rare Black Oystercatcher in the eastern Canary Islands has been known for many years, as will be seen by reference to the synonymy, it having been mentioned by every writer on the group. Unfortunately very little is known as to its habits in the islands, and how it worked its way up the African coast and finally crossed to the Canary Archipelago and there became resident and modified, is still wrapt in complete mystery. At the present day its nearest ally, *Hæmatopus niger niger* Temm., inhabits the coast and islands of Cape Colony, from which species *Hæmatopus niger meadewaldoi* has become evolved. It has been said that there is a Black Oystercatcher on the coast of Gaboon, but very little evidence of the fact seems to be forthcoming. It is true that an enormous part of the African coast-line is quite unknown, and it would not be surprising to find an allied form whose habitat is yet undiscovered.

Hæmatopus niger meadewaldoi is, so far as we know, confined to the islands of the eastern Canary group. It is unnecessary to be more explicit as to its particular haunts; suffice it to say that anyone intending to obtain specimens will save himself much time and trouble if he gives up all such ideas at once! Several collectors have in vain tried to shoot the birds, but have invariably returned empty-handed.

Having obtained trustworthy information as to where I might find this bird, I was lucky in meeting with the object of my search at the first attempt. The Black Oystercatcher strikes the observer at once as being an extremely fine bird, its brilliant red bill contrasting strongly with its surroundings as it runs nimbly over the rough ground. It shows little sign of fear, but when alarmed flies strongly, uttering a clear piping note as it takes to flight; the note is repeated three times in quick succession. I could learn nothing as to its breeding habits. No eggs appear ever to have been taken of this rare Oystercatcher.

The soft parts of this bird are as follows :—Iris brilliant red; ophthalmic ring orange-vermilion; bill bright orange-vermilion, becoming yellowish horn-colour at the tip; legs strawberry-pink, nails whitish horn. Testes large.

Ægialitis hiaticula major. The Greater Ringed Plover.

Ægialitis hiaticola major (Seebohm); Bannerman, Part I. p. 46.

Dr. P. R. Lowe has recently drawn my attention to the fact that Seebohm described a large race of the Ringed Plover, to which form I believe the examples which I have obtained in the Canary Islands should be referred. Although not one of the specimens which I obtained is fully adult, they all agree perfectly with immature examples of the larger race and not with the typical form.

A few Ringed Plovers were noted on the reefs at Toston in Fuerteventura; they were not met with anywhere else. Those of which I had a close view, all appeared to be of this species, although it is often impossible to distinguish in life between this and the typical form of the Ringed Plover.

That *Ægialitis dubia* undoubtedly occurs in the Canary Islands I have proved by shooting a bird in Gran Canaria on January the 19th, 1910, and the following year two eggs of this species were taken close to Las Palmas (*vide* Bannerman, Ibis, 1913, pp. 582–583).

A single example was obtained in Fuerteventura.

Ægialitis alexandrinus alexandrinus. The Kentish Plover.

Ægialitis alexandrinus alexandrinus (Linn.); Bannerman, Part I. pp. 43, 45, 46, 53, 57, 71.

The Kentish Plover is by far the most numerous of all the Charadriidæ. It was found plentifully on every part of the coast which I visited in Fuerteventura, Lanzarote, and Graciosa. It breeds everywhere along the shores, and in Graciosa young birds just able to fly were taken on June the 1st, and freshly laid eggs on June the 6th.

Nobody interferes with these little birds, and in consequence they are exceedingly tame, a marked difference in this respect existing between them and the passing Waders.

A small series was obtained from Fuerteventura and Graciosa.

Bill black ; iris dark hazel ; feet brown ; legs greenish-grey to slate-colour.

The two eggs obtained on June the 1st on Graciosa were similar in colour to the ground upon which they were laid :—Ground-colour pinkish buff, spotted and scrawled with deep black markings, and underlying spots of lavender-grey. They measured 34 × 24 and 33 × 23 5 mm.

Squatarola squatarola. The Grey Plover.

Squatarola squatarola (Linn.); Bannerman, Part I. pp. 46, 63, 71.

The Grey Plover was first seen at Toston (Fuerteventura), where a pair of birds in beautiful breeding plumage frequented the reefs for some days.

In Lanzarote I did not meet with any, but in this island a very short time was spent in the vicinity of the coast. The only other occasion on which I came upon the Grey

Plover was in Graciosa, where a small flock was seen on two occasions.

In the private collection which I looked through at Arrecife were several examples of this bird. The owner informed me that *S. squatarola* was a regular winter migrant to Lanzarote. Meade-Waldo records them as regular winter visitors to the eastern islands. I have shot specimens in Gran Canaria in February.

No specimens were obtained.

Arenaria interpres interpres. The Turnstone.

Arenaria interpres interpres (Linn.); Bannerman, Part I. pp. 43, 46, 53, 57, 71.

A very plentiful species in the eastern Canary Islands, Turnstones were found in Fuerteventura, on the rocky coast south of Puerto Cabras, and in large numbers on the reefs at Toston.

In Lanzarote a very large flock frequented the shores of the Lago Januvio.

In Graciosa they were equally plentiful, but none were seen on the rocky coasts of Montaña Clara and Allegranza.

Several examples were in full breeding plumage. I believe that many remain throughout the year, *i. e.* immature or non-breeding birds.

A small series was obtained in Fuerteventura and Graciosa.

Bill dark horn-colour; iris dark hazel; feet reddish orange.

In every case the testes were small.

Calidris arenaria arenaria. The Sanderling.

Calidris arenaria arenaria (Linn.); Bannerman, Part I. pp. 46, 63.

We did not meet with Sanderlings in May and June in the eastern islands. They are, however, occasionally numerous on migration, and I have seen many of them in the south of Gran Canaria in February.

A mounted example was seen in Arrecife (Lanzarote) which had been shot near that town.

No specimens were obtained.

Tringa alpina alpina. The Dunlin.

Tringa alpina alpina Linn.; Bannerman, Part I. pp. 46, 57, 71.

Dunlins were seen sparingly on the reefs at Toston in Fuerteventura, by the Lago Januvio in Lanzarote, and on the island of Graciosa. Whenever met with they were always in very small numbers, never in flocks. One example had assumed breeding plumage and had the testes fairly large. Dunlins do not apparently frequent any particular part of the coast for long, and I do not think any remain in the islands through the summer.

Examples were obtained from Fuerteventura and Lanzarote.

Bill black; iris dark hazel; feet dark slate-colour.

Tringa hypoleuca. The Common Sandpiper.

Tringa hypoleuca Linn.; Bannerman, Part I. p. 46.

A few Common Sandpipers were noticed on the reefs at Toston. In Gran Canaria these birds are, I believe, found all the year round, but I very much doubt if this is the case in the eastern islands, where they probably only touch on migration.

Specimens were obtained from Fuerteventura.

Bill dark horn-colour; iris dark hazel; feet pale yellowish grey.

Totanus totanus. The Redshank.

Totanus totanus (Linn.); Bannerman, Part I. pp. 46, 63.

A single bird was seen on the Toston reefs in Fuerteventura; we did not meet with it again.

I saw a mounted example in a collection at Arrecife.

I should imagine the Redshank to be a scarce migrant to the Canary group.

None were obtained during the Expedition.

Totanus nebularius. Greenshank.

Totanus nebularius (Gunner); Bannerman, Part I. p. 72.

Limosa lapponica lapponica. Bar-tailed Godwit.

Limosa lapponica lapponica (Linn.); Bannerman, Part I. p. 63.

Limosa limosa. Black-tailed Godwit.

Limosa limosa (Linn.); Bannerman, Part I. p. 63.

A Greenshank was seen on the island of Graciosa. The other two species were not met with during the Expedition.

Stuffed specimens of both Godwits, which had been shot near Arrecife, were seen in Lanzarote. They occasionally touch the islands on migration.

Numenius arquatus arquatus. The Curlew.

Numenius arquatus arquatus (Linn.); Bannerman, Part I. pp. 46, 72.

A Curlew was heard calling on the reefs at Toston in Fuerteventura in the second week in May.

I next flushed four birds on the island of Graciosa early in June. Meade-Waldo often met with them in the eastern islands, but ridicules von Thanner's assertion that the Curlew has bred on the "Matas Blancas" in the south of Fuerteventura.

Numenius phæopus phæopus. The Whimbrel.

Numenius phæopus phæopus (Linn.); Bannerman, Part I pp. 46, 72.

The Whimbrel is a very plentiful species in the eastern Canary Islands in May and June. It was particularly common on the reefs at Toston and on the north-west coast of Graciosa. It is doubtless found in every suitable place round the shores of the larger islands. Von Thanner says that Whimbrels breed on Graciosa.

Examples were obtained from Fuerteventura and Graciosa.

Bill dark horn-colour; iris dark hazel; feet greenish grey.

Sterna hirundo. The Common Tern.

Sterna hirundo Linn.; Bannerman, Part I. pp. 63, 72.

Sterna sandvicensis sandvicensis. The Sandwich Tern.

Sterna s. sandvicensis Latham; Bannerman, Part I. pp. 63, 72.

Both the above species are found at certain times of the year on the coasts of the eastern Canary Islands. In 1841

Sterna s. sandvicensis was found in Fuerteventura and Lanzarote (Webb & Berthelot, Orn. Canarienne, p. 41), while *Sterna hirundo* was said to be sedentary there.

I did not meet with either of the above species during the Expedition. The fishermen, however, knew the "Garajáos" well, although they naturally do not discriminate between the two forms. It is probable that *Sterna hirundo* is the Tern which, according to their statement, visits the islands in the summer when the "Sardinas" are plentiful.

Sterna s. sandvicensis probably is occasionally seen in the winter. I have procured specimens off Gran Canaria in February. In Arrecife (Lanzarote) I saw stuffed examples of both species which had been obtained in the immediate neighbourhood.

No specimens were obtained.

Sterna minuta Linn. The Little Tern.

This Tern is also mentioned by Webb & Berthelot, 'Ornithologie Canarienne,' p. 42, as inhabiting "La partie orientale de l'Archipel Canarien." We did not see any signs of this bird, and could not hear of any having been procured in recent years. It is safe to assume that Terns do not now breed anywhere in the eastern group of islands.

Larus cachinnans. The Yellow-legged Herring-Gull.

Larus cachinnans Pallas ; Bannerman, Part I. pp. 53, 55, 61, 72, 81, 82, 83, 89.

The series which I obtained of this Gull did not show any variation in the colour of the back. All my specimens are uniform light grey on the mantle and wing-coverts.

The Yellow-legged Herring-Gull is a very common resident in the eastern Canary Islands. We met with it on every point of the coast which we visited. In the small islands north of Lanzarote this Gull simply swarms ; it is very tame and is not molested by man. On the East Rock, according to the stories of the fishermen, the Gulls suffer a good deal from the persecution of "Falcons," probably *F. p. pelegrinoides.* The isolated Roque del Este is the only breeding-place of this species which I know of in the eastern islands; here the birds can bring up their young more or less in safety. Fishermen occasionally land there, but in many weathers the rock is quite inaccessible.

A series was obtained from Fuerteventura, Lanzarote, Graciosa, Moñtana Clara, and Allegranza.

Bill deep chrome, tip paler, patch vermilion; iris light lemon-yellow; eyelids orange; feet chrome-yellow.

Testes large or fairly large.

Three eggs were given to me which had been taken on the East Rock some time in April. In colour they do not differ from the usual type of egg laid by this species and measure 70 × 48, 65 × 48, 73 × 50 mm.

Larus fuscus affinis. British Lesser Black-backed Gull.

Larus fuscus affinis Reinhardt; Bannerman, Part I. pp. 53, 72.

The Lesser Black-backed Gull was not met with anywhere in the eastern islands during the Expedition. It obviously does not breed on any of the outer islands or rocks, as I once thought might be the case. It may, however, be considered a fairly regular winter visitor, but occasionally birds turn up in the spring and summer months. Thanks to Mr. Witherby's untiring efforts at ringing the young birds, we are learning much more concerning the movements of this and many other species. Mr. Witherby has kindly forwarded to me the following two highly interesting records. The first is that of a Lesser Black-backed Gull, No. 33,912, marked as a nestling on August the 2nd, 1913, at the Farne Islands, Northumberland, which was recovered by the captain of the Tenerife schooner 'Luz,' while he was engaged in fishing off Cape Juby (the nearest point on the African mainland to the Canary Islands) on November the 13th, 1913. The second instance, which is of more recent date, is that of another Lesser Black-backed Gull marked at the Farne Islands, Northumberland, on August the 2nd, 1913, which was shot on the shore of Lanzarote on

January the 5th, 1914. I am much indebted to Mr. H. F. Witherby for allowing me to publish these details.

As already noted (Part I. p. 73), the dark-backed race, *Larus fuscus fuscus*, is a very rare straggler to the Canary Archipelago.

Larus marinus. Greater Black-backed Gull.

Larus marinus Linn.; Bannerman, Part I. p. 85; Webb & Berthelot, Ornithologie Canarienne, 1841, p. 42; Bolle, J. f. O. 1855, p. 177; 1857, p. 341.

Messrs. Webb & Berthelot and Dr. Bolle in their works cited above each mention *Larus marinus* as breeding on the island of Allegranza, where the former assert that it was "assez commun." In those days this Gull was killed on account of its down, which was sold in London as eider-down! Very probably this breeding station was soon completely wiped out. We could not hear of any such Gull being seen in the island or even in the neighbourhood at the present day.

Porzana porzana. The Little Crake.

Porzana porzana (Linn.); Bannerman, Part I. p. 63.

Gallinula porzana Webb & Berthelot, Ornithologie Canarienne, 1841, p. 40.

An example of the Little Crake which had been shot near Arrecife, was given to me in Lanzarote. Webb & Berthelot record a specimen "of this very rare straggler" having been taken in the Canary Islands in March 1829. Other observers have also mentioned the species as appearing occasionally in the islands.

One bird obtained from Lanzarote.

Chlamydotis undulata fuerteventuræ. Fuerteventuran Bustard.

Otis undulata fuerteventuræ Rothsch. & Hart. Nov. Zool. i. 1894, p. 689.

Chlamydotis u. fuerteventuræ Bannerman, Part I. pp. 51, 52, 88, 89.

Mr. Rothschild rightly notes that the Fuerteventuran bird is much darker above and so harmonizes with the dark sunburnt rocks of Fuerteventura, in contrast to the truly sandy-rufous colouring of *O. u. undulata* which agrees so perfectly with the deserts which it inhabits.

This magnificent bird is, I fear, not nearly so plentiful at the present day as when Mr. Meade-Waldo collected in the island. It is evidently considered a great prize by the Spanish sportsmen, and foreign collectors have treated the bird in a most merciless manner. Even in the breeding season it cannot gain any peace, and the Spaniards have an abominable habit of trapping the bird actually on the nest. Unless this interesting Bustard is in some manner protected, at any rate during the breeding season, I am afraid it is in grave danger of extermination. From accounts which I received, I understand that it is more plentiful in the south of the island than in the centre, where I first met with it. It is seen, I believe, only at certain times of the year on the plains in the north of Fuerteventura. I found the bird in two localities, Antigua and Puerto Cabras. In the former district I came across an adult pair and a single male bird. While in the neighbourhood of Puerto Cabras a farmer brought me a very young bird in an interesting plumage, but it had unfortunately been dead two or three days. Bishop managed to save the skin, which is now in the Natural History Museum.

In Lanzarote the Bustard is rarely seen and then only in the south. I did not meet with it in this island. Polatzek gives several instances of his having seen it there.

For further accounts of *C. u. fuerteventuræ,* see papers by Bolle, J. f. O. 1857, p. 334; Meade-Waldo, Ibis, 1889, pp. 11–12 & 506; Polatzek, Orn. Jahrb. 1909, p. 19; and von Thanner, Orn. Jahrb. 1905, p. 62; 1910, p. 227; 1912, p. 221.

A single immature bird procured.

Bill dark horn-colour; iris yellow; feet greenish grey.

The egg of the Fuerteventuran Bustard is perfectly distinct in colour from that usually laid by *C. undulata*

undulata, the ground-colour of three in the British Museum and of the only example obtained by myself being rich buffy brown (Ridgway, Colour Standards, 1912, pl. xl.), and sparingly spotted and blotched with chocolate-brown with pale underlying purplish markings.

Measurements: 65·5 × 45, 62 × 43, 67 × 44, 66 × 43 mm.

Caccabis petrosa kœnigi. Kœnig's Barbary Partridge.

Caccabis petrosa kœnigi Reichw. Orn. Monatsbr. 1899, p. 189.

Caccabis petrosa petrosa (Gmel.); Bannerman, Part I. p. 88.

The Barbary Partridge from the Canary Islands has been separated by Dr. Reichenow from the north African race on the grounds that it is darker and larger. Those which I have examined from the Canary Islands (8 examples) have wing measurements averaging 167 mm. Without exception Barbary Partridges from the Canary Islands are distinctly greyer on the back than African specimens. Those examined were mostly obtained in different months of the year.

We did not meet with the Barbary Partridge in Lanzarote, which is the only island in which it is resident. A few are said still to be found there. In 1890, when Meade-Waldo visited Lanzarote, he shot a specimen on the lava-flow in the north of the island, the only spot upon which it was said to exist.

Coturnix coturnix coturnix. The Migratory Quail.

Coturnix coturnix coturnix (Linn.); Bannerman, Part I. p. 44.

Coturnix coturnix africana. The African Quail.

Coturnix coturnix africana Temm. & Schleg.; Bannerman, Part I. p. 44.

Quails are plentiful in Fuerteventura and Lanzarote, but we did not succeed in shooting any during our visit. The corn, such as it was, was still standing and afforded a certain amount of cover. Many eggs, mostly quite fresh, were brought into camp by natives. Probably both the above named species, which occasionally interbreed, are found there, but as no specimens were procured this is only conjecture. Likewise I have been unable to determine the exact status of the Quail in the eastern Canary group. It is certain that they are highly migratory, but whether *C. c. coturnix* as well as *C. c. africana* breed in the eastern islands has yet to be proved. Neither Polatzek nor von Thanner distinguish between the two forms. Neither do they remark on the regular migration from Africa, which certainly must take place. Webb & Berthelot were of opinion that migration occurred, but was not general, a certain number of birds departing at the commencement of autumn. For my part I suspect that *C. c. coturnix* arrives in the island to breed, departing again after the summer. *C. c. africana* is almost certain to breed in these islands, but is partially migratory, a very few remaining throughout the year. It is probable that its movements are also regulated to a certain extent by the prevailing weather-conditions. Von Thanner (Orn. Jahrb. 1913, p. 221), describing a visit to Fuerteventura in the spring of 1912, remarks that in consequence of the abundant winter rain the island presented a very different appearance to what it had done in former years, and that Quails which during the *dry years were never seen*, came in great numbers, and their song was heard all over the fields. It is possible that these Quails migrating from Africa would first touch the desert eastern islands, and finding, in consequence of the abundant rainfall, that the islands presented a very different aspect from their usual burnt up appearance, many would be tempted to remain to breed instead of continuing their flight to the western group.

While in Gran Canaria in June I obtained, through the kindness of Mr. T. R. Morgan, four live Quails which had been captured at Firgas. These birds proved to belong to (1) *Coturnix coturnix coturnix*, (2) *Coturnix coturnix africana* × *Coturnix coturnix coturnix*. The latter hybrid very closely approaches *C. c. africana*, but shows faint indication of the black throat and white collar of typical *C. c. coturnix*. The underparts have the rich reddish colouring of the African Quail.

No birds were procured, but a series of 29 eggs was obtained from Fuerteventura and Lanzarote.

Clutches of Quail's eggs were taken at—

1.	Caldereta	(Fuerteventura),	5. v. 13.
2.	,,	,,	5. v. 13.
3.	La Peña	,,	12. v. 13.
4.	Haria	(Lanzarote),	23. v. 13.
5.	,,	,,	26. v. 13.

This series show the usual variety of colouring. As I have no means of ascertaining whether they belong to *C. c. coturnix* or *C. c. africana*, I have not given any measurements or description.

XII.—*Description of a strange New Zealand Wood-Hen.*

By Gregory M. Mathews and Tom Iredale.

(Plate XI.)

Probably no small group of birds has been so much discussed as the New Zealand Wood-Hens, and, without exception, the investigators have been compelled to relinquish the problems without any satisfactory solution having been achieved.

The examination of the series available shows at once the reason of an indefinite result, viz., the accumulation of odd unsexed individuals instead of carefully localised sexed series. The restrictions placed upon scientific collectors by the New Zealand Government, coupled with the unrestricted advances made by the enemies of the birds, the felling of bush, etc., suggest that no definite solution will be reached.

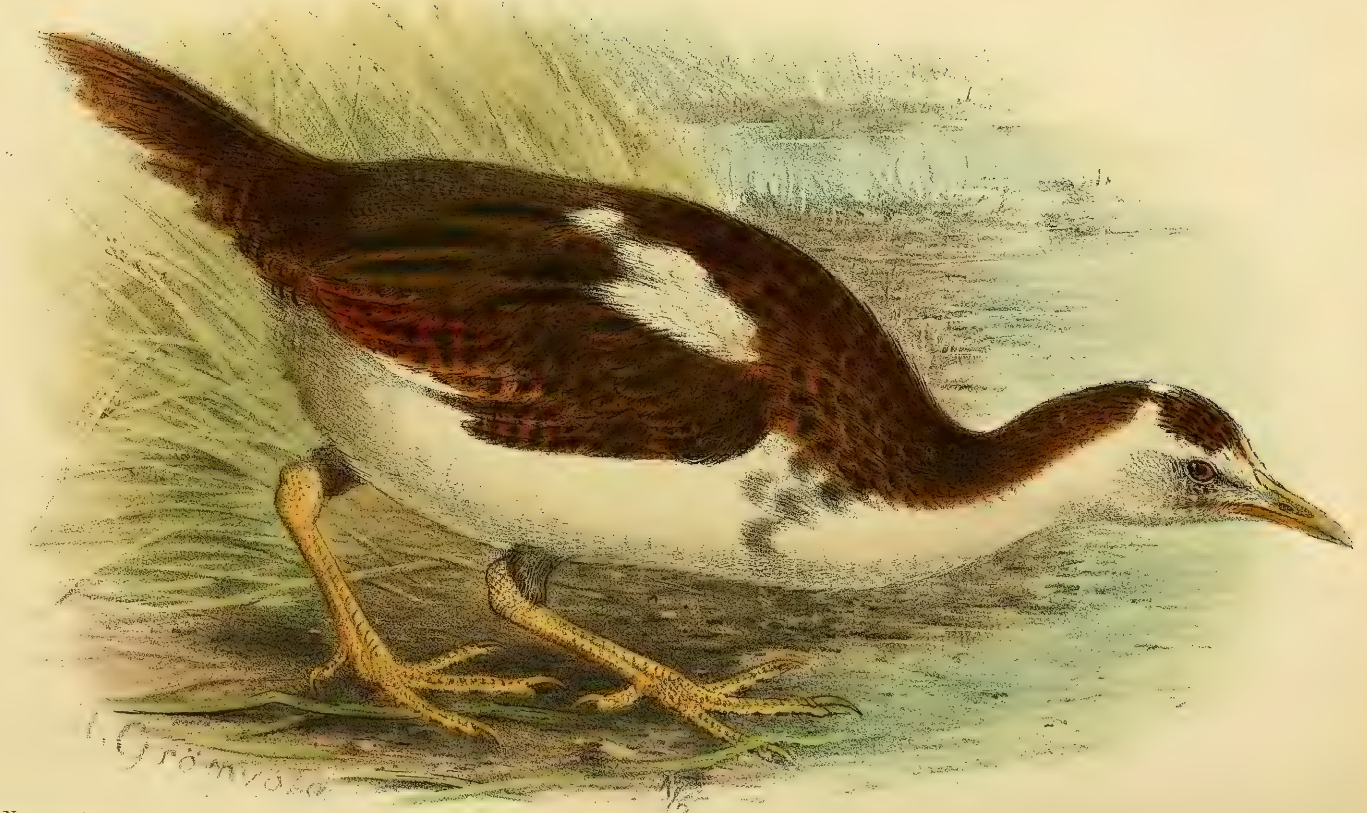
In our Reference List ('Ibis,' 1913, pp. 211–214) we were compelled to lump under the name *Gallirallus hectori* (Hutton), the forms of the South Island Wood-Hen previously known as *Ocydromus australis* and *O. hectori*. To anyone acquainted with these birds and at all familiar with the topography of the South Island of New Zealand, such a lumping would savour of the absurd. The most casual criticism of the birds preserved would simply convince the observer of the incongruity of such a conclusion. The lack of a series, however, negatived any subdivision that would gain acceptance, and a study of the literature revealed a similar hesitancy upon the part of previous workers, most fully acknowledging the incompleteness of their conclusions.

First, it should be observed that there has been little confusion regarding the North Island Wood-Hen. Though comparatively quite a number of birds are in collections from that Island, these show little variation, and there has been no confusion in its nomenclature. The climate and topography of that Island does not show the variation that is found in the South Island.

The first striking form met with in the South Island is that known as the Black Wood-Hen. We admitted this form to specific rank as it occurs alongside a form of normal coloration. Our conclusion was that it was a fixed melanistic form breeding true, and confined to the wet, heavy-bushed south-west coast of the South Island. It is replaced on the tops of the adjoining mountains by a pallid bird, to which Hutton gave the name *Ocydromus hectori*. The lowland form found in company with the Black Wood-Hen was first described as *Rallus australis* Sparrman. It has puzzled every investigator to decide whether these three are specifically distinct or not, and much of this difficulty is due to lack of specimens. In our Reference List we decided in favour of three species, but we could not delimit the subspecies into which these species were certainly divisible. However, as the name *G. hectori* (Hutton) was given to a mountain bird, it seemed certain that it was inapplicable to the common lowland form, as every writer had noted previously.

The examination of the Reischek collection in Vienna by one of us has proved that the birds from any given locality are constant, and the lowland form was differentiated under the name of *Gallirallus hectori reischeki* (Iredale, Austral Avian Record, vol. ii. 1913, p. 15).

Ibis.1914. Pl. XI.



West, Newman imp.

GALLIRALLUS TOWNSONI.

We now draw attention to a most remarkable form of Wood-Hen which we name

Gallirallus townsoni, sp. n. (Plate XI.)

The forehead, lores, sides of face, throat, ear-coverts, fore neck, and all under parts pure white. The white encroaches on each side of the occiput but is divided by a regular stripe of umber. There is a dash of umber under the eyes, a small patch on each side of the breast, a minute patch on each side of abdomen (groin); the outer sides of the thighs are streaked with umber, with a small irregular patch on the vent. The general upper coloration is umber, the feathers having darker streaks on the head and neck, this dark streak being emphasised in the elongated scapulars. The back and rump are almost uniform umber-brown, the bases of the feathers ashy grey, the tips very indistinctly barred with darker. The feathers are quite short. The primaries are clear rusty buff regularly barred with sepia: in one wing the first primary is pure white, in the other the first four are pure white. The tail-feathers are unbarred. A small patch of white feathers is seen on each side among the scapulars.

The bill has the upper mandible pallid horn-colour; the lower darker. The legs are also pallid horn-colour.

Type in Coll. G. M. Mathews from Westport, on the west coast of the South Island of New Zealand.

A solitary specimen, such as has been described, might well have been passed over as an albinistic freak and no further notice taken of it.

The receipt of two specimens identical in their peculiar coloration induced investigation, and we find that three others agreeing with these are already on record from the same locality.

It is unfortunate that in these materialistic days such an interesting phase of bird evolution would be passed over practically without comment unless a name was inflicted upon the phase. We have, therefore, described this peculiar bird as a new species and given it a new name with the hope of thus arousing interest.

When Buller recorded the first specimens he classed them as aberrations of *Ocydromus earli* (=*Gallirallus australis*). They certainly approach this species more than they do *G. hectori*, but they differ from both in several respects.

The general upper coloration of the latter is "isabella-brown or fawn coloured," or "sepia centrally, with sandy edges" giving a sandy appearance. The primaries are fulvous or rusty buff with regular bars, while the tail is also regularly barred.

G. australis is generally of a rusty fulvous above, the primaries deeper with irregular darker barring, which is generally missing on the outer edge, and the tail is unbarred.

The present species lacks altogether the rusty coloration of the latter and has the tail unbarred, but the primaries are regularly barred and of the same coloration as those of *G. hectori.*

It is obvious that if these birds be simply considered as semi-albinistic aberrations, we would still find in the normal form an easily recognisable subspecies.

The birds all came from the neighbourhood of Westport, on the west coast of the South Island, and this fact at once draws attention to the Kiwi which T. H. Potts named *Apteryx mollis*. Notwithstanding this nomination, this form has been ignored as simply an albinism, though, as the following remarks show, it merited some better treatment.

In the Trans. New Zeal. Inst. vol. v. 1873, p. 196, Potts wrote :—"It is probable that other species will be added to this interesting genus (*Apteryx*); for the past two or three years we have known of the existence of a white Kiwi, information concerning it having been scantily furnished at intervals by some wandering miner or prospector. Specimens have at different times been obtained from the bush in the Martin Bay district. From the descriptions that have been gathered they are not albinos, and their occurrence has been too frequent for them to be classed amongst specimens showing a mere accidental and rare variation either of *A. oweni* or *A. australis*; the plumage is stated to be remarkably loose, soft, and flocculent. It is suggested that the name of *mollis* would not be inappropriate as its specific designation. A specimen of this beautiful little *Apteryx* in the Dunedin Museum has the bill slightly *curved,* showing an arc elevated about one-fifteenth of its length.

“ Bill from gape to point	3 in.	9 lines.
Tarsus	2	5
Middle toe and claw	2	4

“ Plumage white, extremities of the feathers more or less stained with yellowish; bristly integument at the base of the mandibles yellowish; narrow yellowish stain round the eye; irides brown, feathers soft to the touch; habitat, bush about Martin Bay, west coast of Otago.

“ Other specimens have been obtained at Greymouth.”

Albinism is a very noticeable characteristic of the birds of New Zealand, the majority of the endemic species having been noted as presenting such aberration, whilst it is very remarkable that albinisms have been already recorded among most of the introduced birds. Yet we have no examples of fixed albinism throughout the avifauna; at the same time the melanistic tendency has been just as often remarked, and we have quite a number of fixed melanisms. We can easily account for these melanistic forms, as, where they have mostly originated and many still live, the country is densely bush-clad, with a very heavy rainfall.

The peculiarity of the bird under discussion, and of *Apteryx mollis* Potts, is that these “albinistic” forms have developed in this same bush-clad country with its heavy rainfall, and which, theoretically, should prohibit the evolution of such aberrations. Yet, according to Potts—and in this case also—these “albinisims” are frequent. We are quite unable to suggest any solution that would satisfactorily account for the apparent fixation of such forms under the conditions noted.

XIII.—*The Moults and Plumages of the Common Moorhen* (Gallinula chloropus *Linn.*). By C. H. B. Grant.

(Text-figure 3.)

In a collection of about 1760 skins of British Birds made by myself between the years 1894 and 1901, and which is about to be acquired by the British Museum, there is a series of 33 Moorhens which show interesting and instructive changes in the moults and plumages.

Among these are three adult and one second-year bird which have dropped completely the whole of the flight- and tail-feathers, being exactly in that state which is commonly met with in the Wild Duck (*Anas boscas*) and the South American White Swan (*Coscoroba candida*) *.

In the 'Birds of Britain,' published in 1907, Bonhote mentions this state of plumage occurring in the Coot (p. 291), where he says, "Although, as a rule, this bird casts its primaries at once, this is not invariably the case, as it sometimes moults them in pairs, like the majority of birds"; also in regard to the Land-Rail (p. 285) he writes as follows:—"During the autumn moult this species, in common with the others of its family, casts all its primaries at once, and is for about ten days incapable of flight." So that, though perhaps this state of plumage in the Moorhen is not altogether new, it has apparently been lost sight of since 1838, when Naumann (Vög. Deutschl. vol. ix. 1838, p. 595) merely says, in talking of the adults, "The moult is very quick in the old birds, and, as a rule, they cannot fly during this time, and are very retiring."

Since that work was published, I can find no reference to the moult of the Moorhen in any recent work on British Birds; in any case it appears so little known that it is well worth while again bringing it before the notice of ornithologists of to-day.

I propose to take the plumages in their sequence from the nestling to the full adults, including the annual moult, as follows:—

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* 'Ibis,' 1911, p. 344.

(1) *Nestling* (May to August).—Above glossy oily green, including wings; sides of head, throat, and neck with long silver-white tips; flanks sooty black; breast and abdomen sooty brown.

Soft parts: Irides hazel; bare skin of throat and neck chrome-yellow; beneath eye greenish yellow, above eye bright blue; head between eyes yellow; base of head reddish orange; egg-tooth yellow; beak reddish orange, dusky at tip; skin of wings yellow; legs and toes sooty.

In an older nestling, which is just showing signs of the first plumage, the back is more sooty black—that is to say, the oily green is less apparent.

In the soft parts the blue over the eye is gone and the yellow on the wings nearly gone.

(2) 1*st plumage* (July and August).—Above olivaceous brown, with a very slight sheen; top of head and neck practically without sheen and slightly darker; flight-feathers and tail usually rather browner than in the adult; sides of head, chest, and flanks brown; throat white, fulvescent in youngest specimens; breast and belly whitish; abdomen white, tinged with fulvous in youngest specimens; flank-stripes fulvous white.

Soft parts: Irides greyish brown; bill in youngest specimens brown, light at tip, sometimes mottled with greenish, in older specimens more dull olive; legs and toes dark green, yellow on tibia.

The frontal shield is insignificant, and coloured like the beak.

One August bird is rapidly getting feathered, but the wings are still in the state of the nestling; another is almost fully fledged, the flight and tail-feathers coming in all together, as is normal in all birds assuming their first dress; two other August and one July bird are fully developed.

In September, October, and the first half of November, the birds are in their first moult, and are assuming the second plumage.

The whole of the body and head is in full moult, but not the wings and tail, which are therefore retained in their first plumage-state through their first winter, spring, and summer up to the following autumnal moult.

(3) *2nd plumage* (Oct. and Nov. till the following Aug.). Above but very slightly different from the adult (third plumage), except back and head, which is olivaceous brown, and some specimens having a tinge of slate intermixed; wings tail not having moulted are as in first plumage: below, chin and throat white, more or less mottled; neck, chest, and breast paler slate than in the adult, tipped and margined with ashy brown, giving the whole a fulvous appearance, more slaty and more fulvous in some individuals; belly and abdomen white or whitish; flanks sooty or slaty brown, in some, flank-stripes white and buff.

Soft parts in November birds: Irides greyish hazel, some tinged with reddish; bill greyish brown or dark olive, greenish at tip; legs and toes green, yellowish on tibia.

The frontal shield is but very slightly more developed than in the first plumage.

A month later, in December, the irides are reddish hazel; bill getting lighter at tip, in one specimen there is a distinct redness on the base of the bill; frontal shield developing.

In January birds the irides are crimson; bill bright red, tip bright yellow; legs dull green, yellow on front of tarsi; frontal shield well developed.

By April the irides have become crimson; bill vermilion or crimson, shading to pure tomato on shield, tip greenish yellow; legs and toes green, with imperfect red or yellow orange ring on tibia. The frontal shield is fully developed.

Thus it will be seen that with the bird in its second plumage the soft parts gradually change from the first plumage-coloration to that of the adult as the spring advances *.

One of the April birds is moulting on the head, so that it is possible some individuals do not always follow the general rule, and this is borne out by a specimen shot at Sandford on the 4th of February, 1878, by Dr. R. B. Sharpe, which shows only the merest indication of the adult coloration on the beak and shield.

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* This agrees with what Macgillivray says (*cf.* 'History of British Birds,' vol. iv. 1852, p. 556).

In July the soft parts are even more bright, especially the red-orange on the tibia. This July bird and the August one are very worn, and have lost most of the ashy brown, thus more nearly approaching adult birds taken in the same months; but the white throat is still distinct.

One of the August birds is starting the moult, but has not yet dropped the wings and tail, and the other is in the full "flapper" state, and is rapidly assuming the full adult dress (3rd plumage), though the white on the throat is still apparent.

Soft parts: Irides crimson or reddish brown; bill red at the base, greenish yellow at tip; legs and toes green, orange or red on tibia.

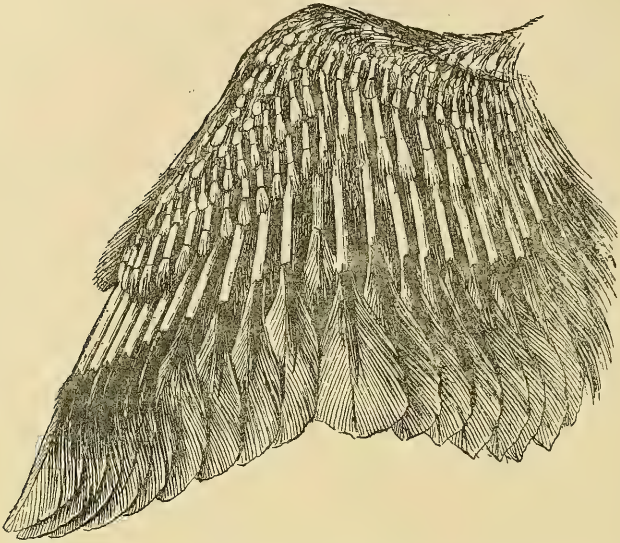
(4) *3rd plumage* (adult).—The adult plumage, which is attained in the second August when the birds are fifteen months old, needs no describing, except to say that there is no trace of white on the throat; the head and neck are dark slaty grey, and the flank-stripes are white. The amount of white on the abdomen seems variable and is probably individual. In all the adults before me there is more or less fulvous on the white under tail-coverts, so that this is not a character of the immature bird.

The annual moult of the adult takes place in August and September. Of the August birds, one has assumed the new wings and tail, but is still moulting on the body and head, and the others are all in the "flapper" state, one completely lacks the flight- and tail-feathers and the others are assuming them all together (text-fig. 3), and thus presenting the appearance of young birds donning their first dress.

The one September bird before me is also moulting, though the flight-feathers have not yet been dropped and are very worn.

From October onwards the birds are not moulting, and, except for signs of wearing in the summer specimens, there is no difference between the winter and summer birds.

Text-fig. 3.



Underside of the right wing of an adult Moorhen in full moult. (4 August, 1901.)

Soft parts: Irides crimson or reddish brown, bill and shield bright red, tip bright yellow; legs and toes green, yellower on front of tarsi; red or red-orange ring on tibia.

In the spring and summer the ring on the tibia and the yellow on the front of the tarsi and toes appears to be brighter.

In the 'Birds of Britain,' 1907, p. 290, Bonhote says: "Bill bright red at the base, with yellow tip in summer; dull olive-brown in autumn and early winter."

There is no doubt he has mistaken the immature bird (second plumage) for the adult in winter; as in the good series before me, there is no difference in the soft parts throughout the year, except for the apparent brightening of the ring and the yellow on the legs and toes. The shield also appears to be rather larger in summer than in winter.

Sexes.—I can see no real difference in colour between the male and female.

The flank-stripes seem to vary individually, though certainly some males have far broader ones than the females; I can see no difference in the under tail-coverts.

Measurements.—On the average the females are slightly smaller than the males both in total length (taken in the flesh) and in the wing-measurement; but this seems to alter somewhat according to the stage the bird happens to be in.

1*st plumage*: No males fully fledged; females, length 12½ to 13 inches; wing 6·2 to 6·9 (157 to 175 mm.).

2*nd plumage*: Length, males, 13⅝ to 14⅞ inches; females, 12¾ to 14¼ inches. Wing, males, 6·7 to 7·2 inches (170 to 183 mm.); females, 6·4 to 6·8 inches (162 to 173 mm.).

3*rd plumage* (adult): Length, males, 14⅜ to 15½ inches; females, 13⅞ to 14⅛ inches. Wing, males, 6·8 to 7·4 inches (173 to 188 mm.); females, 6·6 to 7·0 (167 to 177 mm.).

Thus with the adult the males average in total length 14¾ inches and the females 14 inches, and in the wing the males average 7·1 inches (180 mm.) and the females 6·8 inches (173 mm.). Also the weight of the males is 12½ to 13½ oz. as against 10–11½ oz. in the females.

Of course, only fully fledged birds have been measured.

No fixed rules can be laid down as regards moults and changes of plumage, especially where series are compared that are not all killed in the same year, as there can be no doubt that slight variations occur in different years; but, if one year's series could be compared, I have no hesitation in saying that what I have described would be borne out at least in the main points.

I have to thank Mr. Ogilvie-Grant for so kindly allowing me access to the National Collection, where I have found a series of some 20 specimens from Great Britain, which, laid out alongside my own series, have considerably helped to bear out the above conclusions; though there is not one that is in full moult.

I have only been able to find one specimen in the National Collection that in any way shows this interesting state of the moult, and that is a male bird from Kandahar, collected by Sir O. St. John on the 7th of April, 1879.

This bird has lost nearly all the primaries of both wings, but as the secondaries, the tail, and the plumage generally appear very little worn, and the bird is not otherwise moulting, I cannot help thinking that the lost feathers have been accidentally or purposely removed, and their non-existence is not, therefore, due to moult.

XIV.—*Remarks on the Geographical Distribution of the Chiff-chaff and Willow-Warbler.* By Capt. Hubert Lynes, R.N., M.B.O.U.

(Plate XII.)

In the cork-woods of the Gibraltar neighbourhood during the last few days of April and first few of June 1913, we spent a good many hours over the "*Phylloscopus*" Warblers.

Irby (Ornith. Str. Gib. 2nd ed. 1895, pp. 63–64) records four species of *Phylloscopus* as breeding there: *P. bonellii*, *P. collybita*, *P. trochilus*, and *P. sibilatrix*, the two latter being comparatively scarce. Many writers follow suit, apparently quoting Irby, for I cannot find other independent observations of the same matter on record.

We found plenty of Willow- and Wood-Warblers during the April visit, when they were evidently on passage and without song, but none in June, and no evidence of either species breeding in the neighbourhood on either occasion.

Of the others, Bonellis were plentiful. Their poor song in April suggested only recent arrival in the neighbourhood, and we could find no nests, although in June we saw one brood abroad with their parents among the cork-trees.

The only other breeding *Phylloscopus* (so far as we could find), was *by its song*, I think anyone would have agreed, a Willow-Warbler; singing males of this species shared the cork-wood glades in about equal proportion with Bonellis. For a Willow-Warbler, true, the song was unmelodious and disjointed ("tin-potty," if one may use such an expression), the first two notes jerked out, so that for a moment they might have been put down to an eccentric Chiffchaff, had they not invariably been followed by the four or five notes in descending scale characteristic of the Willow-Warbler—in short, if it was a poor Willow-Wren's song, it was an impossible Chiffchaff's.

On the 29th of April we found a nest with four nearly fresh eggs belonging to this Warbler, and shot the hen bird off the nest, as well as a male singing close by and almost certainly her mate.

The nest, 18 inches above the ground, lightly placed among bracken and Spanish gorse, was decidedly more "Chiffchaff" than "Willow-Wren."

The eggs are curious, they average 15·6 × 13 mm., and the ground-colour is pure white without the yellowish tinge generally found in Willow-Warblers; on the other hand, there is no trace of the violet shell-marks usual in Chiffchaffs' eggs. One of the eggs has sienna-brown freckles and spots of a darkness approaching the average Chiffchaff's; the other three, however, are plentifully sprinkled with quite light red marks like Willow-Warblers'.

Without knowing the parentage I should have put the clutch down as "doubtful, but probably Willow-Warbler."

It was therefore no little surprise, on examining the birds themselves, to find that they possess all the external characters, dimensions, wing-formula, emargination, etc., of the typical Chiffchaff; even in colour, so far as I can make out (and Mr. Witherby, who has kindly helped me in the matter, agrees), there is no appreciable difference from similar-aged birds obtained in the British Islands during summer. Possibly the sulphur-yellow axillaries may be a trifle brighter, but it would require a series of birds in less worn summer plumage than these, to pronounce definitely on the point.

In all we obtained seven specimens: ♂ ad. and ♀ ad. of nest 29/4; ♂ ad. 30/4; ♂ ad., ♂ ad. 2/6; ♂ ad. 3/6; ♂ juv. 4/6. The adults, especially the June ones, are all in very worn plumage, the young bird just in its complete juvenile dress.

During the June visit there was less song, and young out of the nest were frequent; the main egg-laying period would seem to have been about the last week of April.

Now it seems to me that whether or no further experience proves the doubtful character of the eggs to be a constant one, and still assuming that these Gibraltar-breeding birds possess no external character of "form" * by which they can be differentiated from examples of the typical race, the peculiarity of song, which *is* constant, must have some significance; there must be some reason to account for all these numerous Chiffchaffs producing alike the same variation from the stereotyped "*chiff-chaff*" of the birds breeding in our own northern latitudes †.

It, at any rate, stamps that particular aggregate of individuals with a distinctive "habit" capable of recognition by the field-observer, and as such may prove useful in the study of the important, and as yet little understood, problems of migration and geographical distribution.

The case of a sedentary race of the Chiffchaff to the southward of Gibraltar has so important a bearing on the subject, that I may perhaps be forgiven for recalling the following facts with regard to the Canarian Chiffchaff, *P. c. canariensis* Hartwig.

In 1887 Capt. Savile Reid, having spent January to April in Tenerife, wrote ‡ as follows:—"Another bird quite common in the lower region as well as in the forest region . . . . extremely lively and abundant . . . . sorely puzzled by the notes of this bird, which differ considerably from the well-known 'chip-chop' . . . . Canarian birds express their song at greater length in a desultory manner, though also in monosyllables, the sounds '*chip-cheep-cheep-chip-cheep,*' &c. . . .

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* The word "form" used in this paper is intended to include "colour."

† Dr. Hartert (Vög. pal. Fauna, i. p. 509) records an instance of a Willow-Warbler in Germany singing like a Chiffchaff, but in that case it seems to have been the idiosyncrasy of a single individual; similar observations have been recorded by Pässler, Parrot and others.

‡ 'Ibis,' 1887, pp. 431–2.

"Nests generally 4 or 5 feet above the ground, eggs spotted pale red like '*trochilus*' . . . ."

In 1889 Canon Tristram, after a visit with Mr. Meade-Waldo to the Canary Islands in April and May, wrote [*] confirming Reid's field-observations for some of the other Canary Islands as well as Tenerife (but without noticing the egg peculiarity), and added that the bird was a "constant resident, not even migrating up and down the hills." Tristram further recognised and described certain peculiarities in colour and form, and following the (British) general practice of the period accorded the bird specific rank as *P. fortunatus*.

Since those days, thanks to other writers, the bird's status has become well known ; it is widely recognised as a subspecies of the typical *P. c. collybita*, under the name of "*P. c. canariensis* Hartwig," and Dr. Hartert gives a full description of it in his Vög. pal. Fauna, briefly thus :—

Compared with typical P. c. collybita.

Form.—Smaller size, much darker, olive-brown upper-parts, also much browner under-parts.
Wing broader, shorter, less pointed, more rounded.

Habits.—Different song, of *more* than two notes, not at all like our Chiffchaff's call-note [†], harsher and shriller.
Nest generally placed higher.
Eggs generally four, white, with brownish or reddish freckles and dots inclined to run a little larger.

Habitat.—The western Canary Islands, where it is resident [‡].

I may say that in three specimens of *P. c. canariensis* obtained by Miss Jackson in Tenerife in April 1913, besides the colour-differences being obvious at first glance, all three birds have the bill quite remarkably robust, larger in every dimension than in any of some thirty *P. c. collybita* examined alongside them.

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[*] Tristram, 'Ibis,' 1889, p. 21 ; Meade-Waldo, 'Ibis,' 1889, p. 6.

[†] The Gibraltar birds had the typical soft call-note.

[‡] *Note.*—Dr. Hartert also describes a further subspecies (*P. c. exsul*) from Lanzarote, one of the eastern Canary Islands ; its habits seem to be little different from those of *P. c. canariensis*.

Here, then, we have the Canarian bird differing in certain habits and in form from its typical species, while in a certain district (restricted, but to what extent we know not yet) intermediate between their breeding-areas, are breeding Chiffchaffs with habits resembling the former, but with the typical form.

An interesting line of thought is thus provided.

There are many good reasons for thinking that the "habit" of song * may be correlated with others, such as "migratory movement"—in fact, these south European, and particularly the Gibraltar, Chiffchaffs are generally quoted as being "resident" or "sedentary" (although, as I propose to point out later, I believe this to be mere guesswork). It is, moreover, an observed fact in Nature which provides interesting reflections on the inter-relationship of variation in "habit" and variation in "form."

Darwin (Orig. of Sp. p. 220) says "It is, however, difficult to decide . . . . . whether habits change first and structure afterwards, or whether slight modifications of structure lead to changed habits—both probably occurring simultaneously."

Anticipating, for instance, what requires the accumulation of a vast amount more fact before the truth can be arrived at, it is conceivable that here is an instance of what may be termed an "incipient variety" [*], an *aggregate* of individuals at the present day indistinguishable in form (colour and external characteristics), but possessing a habit so different from that of its type-species as to indicate a tendency towards variation in form, which may in time attain that first recognisable degree defined as "racial" or "sub-specific," as has presumably been the case with the Canarian race of Chiffchaff.

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* Professor Newton (Dict. Birds, p. 893) says: "A curious question which has yet attracted but little attention is whether the notes of the same species of bird are in all countries alike. From my own observations I am inclined to think not, and that there exist 'dialects,' so to speak, of song (*cf.* Gloger, J. für Orn. 1859, p. 398; Allen, Bull. Mus. Comp. Zool. Harv. Coll. ii. pp. 166, 167)."

Eliot Howard (Brit. Warblers, p. 20) points out certain differences in song among Warblers and Chats in different localities and suggests that "there is a possibility, even a probability, perhaps, of some connection between type of song and climate."

Witherby ('Ibis,' 1905, p. 186) notes the remarkable difference between the song of the Wood-Warbler in Algeria in April and that of our British Wood-Warblers.

As remarked before, it is either implied or stated in most of the standard works of reference that the Chiffchaff is more or less resident in southern Europe. Since no records for individual birds seem ever to have been attempted, it is presumed this only means that the *species* is to be found there, both in winter and summer, which is, of course, a very different thing to the *individuals* of the species being non-migratory; I can find no real facts about that, but it is important in its bearing on the present subject.

With the view of enquiring generally into the Chiffchaff's (*P. c. collybita*) southern breeding and northern winter limits, and whether any reason, geographical or physical, could be deduced to account for them, I started plotting out on a chart, both for the Chiffchaff and the Willow-Warbler (whose strong resemblance complicates field-observation on its congener), all the records I could find from a fairly wide selection of references [†], but soon found that the material was quite inadequate for the purpose. I am, therefore, only able to present the very incomplete affair shown in the map (Pl. XII.), upon which I would offer the following remarks :—

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[*] Darwin ('Origin of Species' p. 76) ". . . . varieties which I have called incipient species . . . ."

Note.—I trust this will not be construed into a proposal for some new sort of "Name." Naturally, such an idea would be almost as absurd as to suggest giving every single bird a name of its own because it possesses "individuality" and a tendency to vary.—H. L.

[†] Hartert's 'Vög. paläarkt. Fauna.' H. Saunders, Man. Brit. Birds. Hand-list Brit. Birds (Hartert, Witherby, and others). Cat. Birds Brit. Mus. Ibis. Eliot Howard's 'Warblers.' Irby's Ornith. Str. Gib. Jourdain's 'European Eggs.' Whitaker's 'Birds of Tunisia.'

There are doubtless other works that would offer a few more data, but I cannot foresee any approach to their contributing sufficient material for the original purpose, and only hope these remarks may bring out some new facts not already recorded or that have escaped my search among the above.

NORTHERN WINTER LIMITS.

The following generalities may perhaps be considered fairly well substantiated :—

Chiffchaff.—All over the Mediterranean littoral, but *not* the cold inland regions behind the northern shores, and on the western coasts of Europe, so far north as the warm influence of the Gulf Stream pushes the Mediterranean isotherms to the north-east there. It is clearly a matter of temperature; the most northerly-wintering individuals of the species evidently keep quite close to the bare possibilities of their insect food.

Willow-Warbler.—Quite different to the Chiffchaff in winter requirements, as its most northerly members only just touch the south-west end of the Mediterranean.

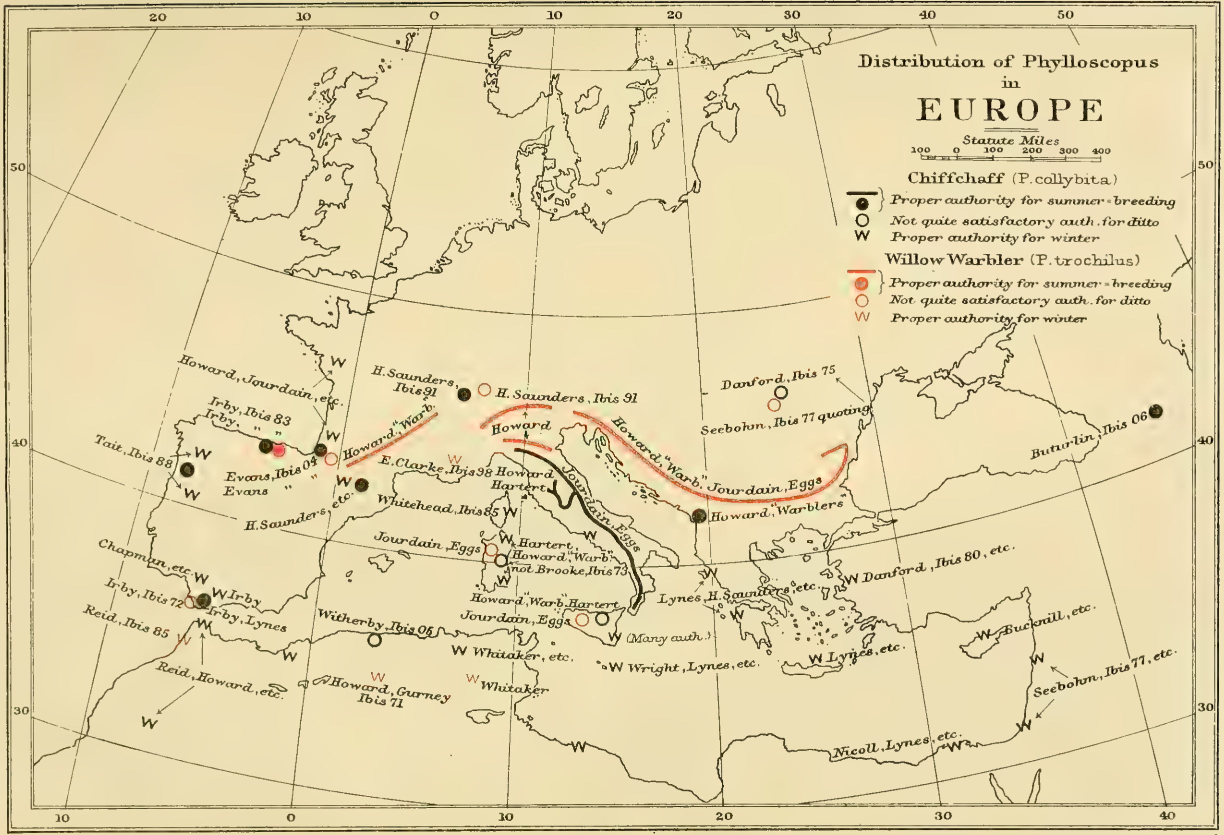
(The authority for Provence is too good to be disregarded, and is presumably supported by specimens, but it must surely be a little exceptional, with no other, or negative, records for so great a distance around it.)

SOUTHERN BREEDING LIMITS.

These are so ill-defined than no generalization can be made, but the following remarks are offered :—

Chiffchaff.

Portugal.—Given in a general way by Tait. But how far south? We know it breeds (the one with the curious song and eggs) in numbers at Gibraltar, but there seem to be no records of breeding elsewhere in Andalusia. Abel Chapman and I were constantly in cork, ilex, and pine woods from the Sierra Nevada to Jerez (March, April, and May 1910, *vide* 'Ibis,' 1912, p. 451) and never found the suspicion of a Chiffchaff breeding at any altitude, or, for the matter of that, in a short visit to the chestnut and oak woods of north-west Estremadura at the end of May 1910.


Distribution of Phylloscopus
in
EUROPE
Statute Miles
100 0 100 200 300 400
Chiffchaff (P. collybita)
▬ ● } Proper authority for summer-breeding
○ Not quite satisfactory auth. for ditto
W Proper authority for winter
Willow Warbler (P. trochilus)
▬ ● } Proper authority for summer-breeding
○ Not quite satisfactory auth. for ditto
W Proper authority for winter
20
10
0
10
20
30
40
50
50
40
30
10
0
10
20
30
40
Howard, Jourdain, etc.
Irby, Ibis 83
Irby, " "
Tait, Ibis 88
Evans, Ibis 04
Evans "
H. Saunders, Ibis 91
H. Saunders, Ibis 91
Howard "Warb."
Howard
E. Clarke, Ibis 98
Howard
Hartert
H. Saunders, etc.
Whitehead, Ibis 85
Jourdain, Eggs
Jourdain, Eggs
Hartert,
Howard "Warb."
not Brooke, Ibis 73
Howard "Warb." Hartert
Jourdain, Eggs
(Many auth.)
Howard "Warb." Jourdain, Eggs
Howard "Warblers"
Danford, Ibis 75
Seebohm, Ibis 77 quoting
Buturlin, Ibis 06
Chapman, etc.
Irby
Irby, Ibis 72
Irby, Lynes
Reid, Ibis 85
Reid, Howard, etc.
Witherby, Ibis 06
Howard, Gurney
Ibis 71
Whitaker, etc.
Whitaker
Wright, Lynes, etc.
Lynes
H. Saunders, etc.
Danford, Ibis 80, etc.
Lynes, etc.
Bucknill, etc.
Seebohm, Ibis 77, etc.
Nicoll, Lynes, etc.

Bale & Danielsson, L.td

In March, April, and May 1905 Mr. Ratcliff and I had a similar experience in the province of Huelva, which abuts on the south-eastern borders of Portugal.

Excepting near Gibraltar, do any Chiffchaffs nest in the Iberian peninsula south of lat. 40° N.? If there really is a gap in the breeding-area, it decidedly favours the theory that the Gibraltar birds are more or less non-migratory.

Atlas Range.—There are many suggestions on record of various *Phylloscopi* breeding there, based on song and enlarged sexual organs, which are, of course, no *proof* whatever, especially in migrating birds, which are only a few hundred miles or less from their prospective breeding-grounds. The only record which must be referred to is that given by Witherby ('Ibis,' 1905, p. 186) for the nest and eggs of a *Phylloscopus* in Algeria.

With regard to its species, Witherby tells me that after a long wait he was unable to obtain the owner of the nest and therefore left it intending to return next day; this he did but was unfortunately unable to locate the nest again, but he described it as "evidently belonging to this species," and as a Chiffchaff in song with testes in breeding condition * was obtained in the same locality, it is nearly certain that the Chiffchaff *does* breed there.

Sardinia.—Extremely doubtful as a breeding locality, and if its reputation as such rests only on Brooke's ('Ibis,' 1873, p. 244) note, still more so, for I do not read it that he refers to breeding at all. (Records show almost certainly that Corsica is not a breeding locality.)

Sicily.—Apparently very doubtful too. We certainly did not find the Chiffchaff in the very suitable-looking country of the eastern interior in May 1907 (*vide* 'Ibis,' 1912, p. 121); on the other hand, one hears of great possibilities in the little-known forests in the central parts of the island.

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* It is interesting to note that this particular specimen was mentioned in Witherby's paper as "*P. trochilus*," but on re-examining it just recently we find it is a typical *P. c. collybita*, just like the Gibraltar ones, and he asks me to mention this in order that the correction may be made in his paper. He does not remember what the song was like, but the possibility of his having been led into a too hasty identification by a Willow-Warbler-like song suggests itself.

Italy.—I cannot find the records from which the conclusions are drawn.

Willow-Warbler.

Gibraltar.—There does not seem to be independent records by other than Irby, who is widely quoted; and, with all due apology for venturing to question so great an authority, I have only given the record a hollow ring on the map for several reasons:—First, according to "Ornith. Str. Gib. 2nd ed. 1895, p. 64," it appears that the breeding statement is based on field-observation only, and I think it quite possible that, like myself, Irby may have been deceived by the Willow-Warbler-like song of the Chiffchaff there, if specimens were not obtained; secondly, the locality is so very isolated from the next record.

After all the ring on the map can easily be solidified by anyone who can produce a nest and eggs from Gibraltar, with a specimen of the Willow-Wren shot from it.

Sardinia and Sicily.—The records seem more doubtful than for the Chiffchaff.

In the foregoing remarks only the species have been dealt with; still more obscure is the distribution of the subspecies "*P. t. eversmanni*" and "*P. c. abietina*," both occurring in the Mediterranean basin, the former probably only as a passage-migrant, the latter known to winter on its south-eastern shores (Nicoll, 'Ibis,' 1909, p. 295).

It is surely no unworthy aim to collect and scrutinize all facts, however apparently insignificant, that may throw light on so great a problem of Nature as the relationship between the geographical distribution of living creatures and modifications of their habits and form.

Would not the material for plotting out accurately with full data the geographical distribution of even one species such as the "Chiffchaff," with its several (already recognised) subspecies, and perhaps several other "incipient" ones, be well worth collecting with such an end in view?

There should be no great difficulty; the principal field of observation is in an area well stocked with ornithologists; the subject within the capabilities of all—the only requisite is the wish to "find out."

One so often hears it said that "Now the world has been so travelled over, there is little of ornithological interest left to discover," suggesting that when all the earth has been quite explored and all the new birds discovered, there will be nothing left for the field-ornithologist to do.

But does not such a thoughtless remark arise from a disproportionate regard for "classification" as the Ultima Thule of ornithological research, instead of only as a means to an end?

Sir Joseph Hooker writes of Plants, "The objects of a Classification of plants are to place before the mind, in a clear manner, the relationships that exist between them, and to express these relationships in precise terms, so that they may be communicated orally or in writing *and thus facilitate and advance a knowledge of plants.*"

And surely the same definition applies equally to all branches of Natural History?

One cannot help thinking that if that principle were more generally recognised and acted upon, it would tend, not only to prevent ornithological classification from becoming stocked with phantom forms, but also towards the more general recognition of forms which, though distinguished only after a careful scrutiny of minutiæ, are realities, and as such (to use Dr. Hartert's simile) a "brick" towards the building up of the house of Ornithological Knowledge.

To return to the Chiffchaffs (if I have any friends left among my readers after the last volley), may I suggest the following lines of action as likely to produce useful results, besides having the merit of presenting certain definite objectives to any field-ornithologist who has the opportunity of making the observations and the will to do so?

With regard to the Gibraltar-*breeding* Chiffchaffs:—

(*a*) Are these non-migratory (*i. e.*, resident) individuals, or do they leave in winter to make room for winterers from further north?

This is, of course, not so easy to find out, since it is almost certain that Gibraltar will receive its winter proportion of Chiffchaffs from the north, irrespective of the movements of the local breeders.

Ringing and perhaps observations in March will perhaps prove the most fruitful methods of attacking this little problem.

(*b*) Will examination of more specimens, particularly of freshly moulted adults in autumn, show any peculiarity of form (including coloration) to distinguish these Gibraltar birds from typical *P. c. collybita*?

(*c*) Does further experience show that the peculiarity of the eggs is constant?

(*d*) When does the song commence in spring? Is it ever heard in winter *? If a resident, and such were the case, it would help towards the solution of (*a*). Is the song *always* the same, Willow-Warbler-like?

Dr. Hartert, who has very kindly interested himself in the matter and to whom I have given the nest, eggs, and specimens of the Gibraltar Chiffchaffs already alluded to, permits me to say that he will be glad to compare them with any others that may be sent to him in connection with this particular question.

With regard to the distribution question in general, I think that the map itself, without further remark, shows sufficiently the many gaps that can be filled in by the field-ornithologist.

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* There are quite a few records of the Chiffchaff's song being heard in the Mediterranean basin in winter time.

XV.—*Size in the Avian Order Tubinares.* By J. T. Nichols, American Museum of Natural History, New York City.

(Text-figure 4.)

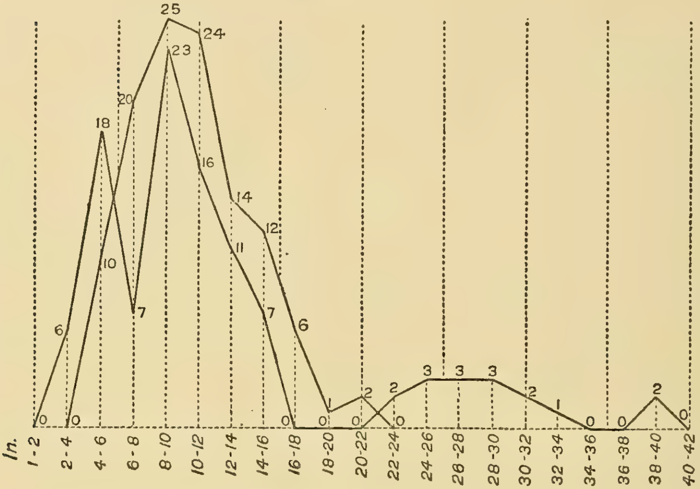
It is believed that the very great range in size among the members of the Avian order Tubinares, consisting of pelagic birds of more or less similar habits, and particularly numerous in the southern hemisphere, is due to intra-ordinal competition in absence of extra-ordinal competition.

Birds of this group feed off shore on fish, other marine life, and flotsam and jetsam, which they obtain at the surface. An exception, the genus *Pelecanoides*, which has acquired the diving habits and general character of the Alcidæ of the north, and therefore does not form so good a unit with other members of the order, has been excluded from the present discussion. To compare the sizes of the remaining species, the British Museum Catalogue, 1896, has been referred to, and the total length minus the tail has been used. Counting the length of the tail-feathers would give an erroneous idea in the smaller species, the comparative size of which would be greatly changed by the length or shortness of this member. Measurements thus obtained have been divided into groups with a one inch radius, and plotted in a line the height of which shows the number of species of the different sizes (fig. 4). For purposes of comparison a similar line plotted for the Gull-Tern order Longipennes rises abruptly to a single peak and falls almost as abruptly, but that of the Tubinares is much more extensive and shows at least three significant peaks, or predominant sizes—that of the small Mother-Carey's Chickens, that of the medium-sized Shearwaters, Fulmars, etc., and that of the large Albatrosses.

The Tubinares are pelagic birds *par excellence,* and almost all the aerial pelagic birds of the southern hemisphere below the Tropic are Tubinares. To one familiar with their breeding and feeding habits, it is perfectly obvious that the great range in size relieves pressure of competition. The small

Wilson's Petrel or Mother-Carey's Chicken, the medium-sized Cape Pigeon, and the large Albatross collect at one time to partake of the scraps from a ship, and the smaller birds are satisfied with crumbs left by the larger ones. Resorting from vast stretches of sea to nest on islands, as the different species must, the smaller ones seek the protection

Text-fig. 4.



The longer line extending the length of the diagram shows the variation in size in the Tubinares, the shorter line rising to one peak, that in the Longipennes or Gaviæ.

of necessarily limited holes and crevices; the larger, not needing protection, nest in the open. If all were approximately the same size, each would tend to crowd the other.

The case in the largely northern Longipennes is the reverse. Instead of being especially adapted to one feeding environment, these are decidedly all-round birds, at home everywhere. Some species are no less truly pelagic than the Tubinares, others live inland, where they feed on insects or even follow the plough. Their breeding range is much more extensive, inland or on the coast, wherever suitable opportunity offers. Such being the case, they compete among themselves much less, but meet with more outside competition, with Alcidæ, shore-birds, land-birds, etc. It is difficult to believe that a Gull of the size of an Albatross would find a place inland or shore-wise, available food being preëmpted by vultures, mammals, etc., and there being few available safe nesting-places for birds even as large and clumsy as a Pelican. The only chance such a form would have to pick up a living, would be over wide stretches of sea. As one would expect, the Tubinares, not the Longipennes, have filled this sea gap, the sea being their especial field.

At the other end of the line, inland Terns, if of much smaller size, would meet an increasingly strong competition for food with the host of smaller land-birds. For instance, a minute species with habits similar to those of the Black Tern would come in direct competition with Swallows and other insectivores. Small pelagic species would have difficulty in finding proper nesting sites, partly from the abundance of the Alcidæ in the north. It is interesting that the small, abundant Wilson's Petrel, nesting in the southern hemisphere in summer, crosses to the northern hemisphere and helps fill the hiatus left over the north Atlantic by Gulls, Phalaropes and Alcidæ when these are necessarily ashore, breeding in the northern summer.

The presupposed case would be a comparative unity in the size of the Longipennes, which the facts seem to show.

In conclusion, great variation in size and predominance of certain periodic sizes is a definite character of the order Tubinares, which may be explained by intra-ordinal competition.

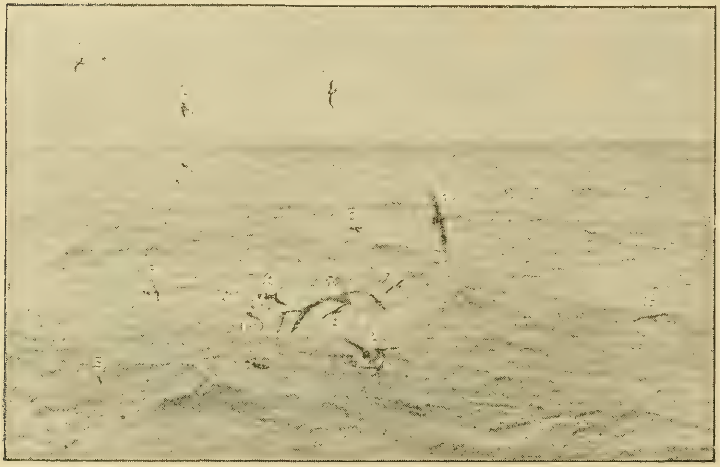
XVI.—*A Flock of Tubinares.* By Robert Cushman Murphy, Ph.B., Brooklyn Museum, New York City.

(Text-figure 5.)

The accompanying photograph of a flock of Tubinares was taken by the writer on the 4th of November, 1912, in latitude 32° 28′ S., longitude 45° 42 W., in the south Atlantic

Ocean. Nine species can be identified in the picture, and several additional species were in the same flock within a few moments of when the shutter was released.

Text-fig. 5.



Photograph of Tubinares.

The birds photographed comprise the following species:—

Fig. 1.	*Diomedea exulans*	(2)
,, 2.	*Diomedea melanophrys*	(1)
,, 3.	*Phœbetria cornicoides*	(2)
,, 4.	*Macronectes gigantea*	(1)
,, 5.	*Puffinus anglorum*	(1)
,, 6.	*Œstrelata incerta*	(3)
,, 7.	*Priofinus cinereus*	(1)
,, 8.	*Procellaria* (=*Majaqueus*) *æquinoctialis*	(2)
,, 9.	*Oceanites oceanicus*	(1)

A strong northwest wind was blowing at the time the picture was made, and flocks of Tubinares followed our brig southward all day in pursuit of bits of pork-fat and loggerhead-turtle meat which we trailed from the stern. In addition to the nine species of birds named above, we saw one or more individuals of *Thalassogeron chlororhynchus*, *Daption capensis*, *Halobæna cœrulea*, and *Fregetta grallaria*.

We caught many of the birds on fishhooks, hauling them down from the air as animated kites, or, in the case of the larger, heavier species, dragging them in along the surface of the water. A Giant Petrel (*Macronectes*) was the first to fall a victim, after which we captured specimens of *Diomedea exulans*, *Puffinus anglorum*, *Procellaria æquinoctialis*, and *Daption*. The "Cape hens" (*P. æquinoctialis*) were very aggressive, driving the Shearwaters and smaller Petrels away from the trailing bait, diving beneath the surface in their efforts to seize it, and even fighting with the Albatrosses and *Macronectes*. Whenever the vessel paused in her course for an instant, owing to the rolling seas, there would be a tremendous hurly-burly of birds battling over the treacherous bait.

The photograph thoroughly demonstrates how clearly the diagnostic characters of birds can be shown in even a brief and distant glimpse. For except in the case of the bird I have labelled *Puffinus anglorum*, an ornithologist familiar with living Tubinares could identify almost every bird in the picture. Particularly characteristic are the poses of *Profinus* (No. 7) and *Phœbetria* (No. 3), even though the actual pictures are minute and scarcely more than silhouettes. The blurred *Macronectes*, also, "standing on end" and wheeling, has a certain stiffness and straightness of wing which the field-student of Tubinares will recognize at once as being peculiar to the species.

XVII.—*Obituary.*

Gerald Edwin Hamilton Barrett-Hamilton.

It is with great regret that we have to record the sudden death, by heart failure, of Major Barrett-Hamilton, M.B.O.U., in South Georgia, in the Antarctic, on January the 17th. At the end of last year he had been commissioned by the

Colonial Office and the Natural History Museum to lead an expedition to that desolate spot, to investigate and report on the condition of the whale and seal fisheries in the island.

Barrett-Hamilton, who was the eldest son of the late Captain Samuel Barrett-Hamilton, J.P., of Kilmanock, Co. Waterford, Ireland, was born on May the 18th, 1871, and was educated at Harrow, and subsequently at Trinity College, Cambridge, where he graduated in 1894. He was called to the Bar at the Inner Temple in 1896. From his school-days he was interested in Natural History, and he wrote an excellent list of Harrow birds published as one of the Harrow School Scientific Memoirs in 1892.

After taking his degree he was appointed to accompany Prof. D'Arcy Thompson, who was sent by the Colonial Office in 1896 to make a joint investigation with a Commission from the United States Government, on the condition of the fur seals and the industry in the north Pacific and Behring Sea. Leaving England in 1896, and travelling via San Francisco and Japan, Barrett-Hamilton reached Petropavlovsk in Kamchatka in July, and spent the summer in the Seal Islands. In the following year he again returned, this time via Egypt and Ceylon. Some account of his travels was published in the Journal of the Royal Geographical Society for 1898 (pp. 280–299), and the 'Scottish Geographical Magazine' for 1899 (pp. 225–256), while he wrote for 'The Ibis' (1900, pp. 271–298) an interesting account of the birds of Kamchatka which he met with during those journeys, and described from there a new species of Nutcracker (*Caryocatactes kamchatkensis*).

Barrett-Hamilton joined the 5th or Militia Battalion of the Royal Irish Rifles in 1893, and served with them in 1901–2 in South Africa during the Boer war. The greater part of his time he was stationed at Vredefort Road Station on the railway between Bloemfontein and Johannesburg, a desolate spot, but he was able to make large collections of birds and mammals, which he sent home to the British Museum, and so beguiled the tedium of his job. He obtained the Queen's medal and five clasps, and was given the rank of Hon. Captain in the army for his services in the field.

Mammals perhaps rather than birds engrossed Barrett-Hamilton's interest, especially of late years, and most of his published work relates to the higher order. After returning from the Pacific he spent a great deal of his time at the Natural History Museum as a voluntary worker in the Mammal department, where he published a long series of papers on palæarctic Mammals. At the time of his death he was engaged on an authoritative work on the British Mammals, of which about half the numbers have appeared. It is a great satisfaction to hear that arrangements have been made to complete this work.

Barrett-Hamilton was elected a member of the Union in 1889, and in addition to the paper on the birds of Kamchatka, wrote in 1903 for 'The Ibis' an interesting account of his observations on the flight and distribution of the Albatrosses of the north Pacific. In the same year he discussed (Proc. Irish Acad. xxiv. 1903, pp. 303–314) a favourite theory of his, by which he endeavoured to explain physiologically the cause of the whitening of mammals and birds in snowy countries. He believed that this was connected with the cessation of metabolism and the deposit of fat. He also made a number of shorter contributions to 'The Zoologist' and 'Irish Naturalist' on various points of Irish ornithology.

In Barrett-Hamilton we lose a most enthusiastic zoologist, an indefatigable and thoughtful collector, and a charming personality, beloved by all who had the pleasure of his acquaintance. Like Wilson and Boyd Alexander, he is cut off in his prime, before he has had time to do his life's work, and we cannot but feel great sorrow that we have lost so many of our younger and promising naturalists during the last few years.

He married in 1903, Maude Charlotte, daughter of Mrs. Sarah Clibborn Eland, of Ravenshill, Transvaal, and she and six young children survive him.

Frederick Vavasour McConnell.

We regret to have to record the death, on January the 26th, of Mr. McConnell; he had been in indifferent health for some time, and underwent an operation in London on January the 17th, from the effects of which he never recovered.

Born in 1868, he was the second son of the late Mr. John McConnell, who for many years was resident in British Guiana.

F. V. McConnell was an ardent naturalist, and when in British Guiana did not confine himself to the coast lands, but made several expeditions into the interior, and he was one of the first to ascend Mount Roraima. This he did in company with Mr. J. J. Quelch and Mr. C. A. Lloyd in 1894, spending three days and two nights on the plateau at the summit.

He made a second expedition to Mount Roraima, with Mr. J. J. Quelch, in the months of August, September, and October, 1898. During this journey a collection of zoological specimens was made which furnished several new species in various branches of zoology, and the following new forms were named after him:—*Rhipidomys macconnelli*, *Zonotrichia macconnelli*, *Oreophrynella macconnelli*, *Odontopeltis macconnelli*, and *Trechalea macconnelli*. The collection was presented to the Trustees of the British Museum and deposited in the Department of Zoology. The various groups were described by the officials of that institution, and the report published in the Transactions of the Linnean Society, Zoology (2) viii. 1900, pp. 51–76.

McConnell, though interested in zoology generally, directed his special attention to ornithology and became a member of the B.O.U. in 1900; he restricted his collecting area to the confines of British Guiana, where he had important interests. He made a good representative collection of the avifauna, and placed on record several species not previously known to occur in that Colony. It was he who obtained an example of Jardine's Goshawk (*Astur jardinei*

Gurney) in British Guiana, previously to which the habitat of this species was unknown; he also obtained specimens of Riker's Pointed-tail (*Berlepschia rikeri* Ridgway), which was previously known only from Santarem in Brazil. McConnell described two new forms from British Guiana, *Neopipo helenæ* and *Rhynchocyclus olivaceus guianensis*, in the Bulletin of the Club (vol. xxvii. 1911, p. 105); the types of these are in his collection.

McConnell had for some time been preparing a list of the species in his collection, giving the localities where the specimens had been obtained, with the object of throwing some light on the distribution of the birds in that portion of South America. The manuscript is well advanced towards completion, and it is intended to publish it in book form in the near future. C. C.

Albert Charles Ludwig Gotthilf Günther.

Dr. Günther, who was for so many years Keeper of Zoology in the British Museum, died on February the 1st last, in his 84th year. He was the son of Friedrich Gotthilf Günther, Estates Bursar of Möhringen, and was born at Esslingen, in Württemberg, October 3, 1830. He was educated at Tübingen, where he took his Ph.D. in 1852, and also at Bonn and Berlin Universities. He qualified as a medical man, doing part of his work at St. Bartholomew's Hospital in London, and taking a medical degree at Tübingen in 1862, and although he had a door-plate on his residence at Surbiton, he did little to gain a practice, as he was already deeply interested in zoology and was working at the British Museum, where he was appointed on the staff in 1857, and rose in 1875 to be Keeper of the Zoological Department, a post which he held until he retired at the age of 65 in 1895.

Dr. Günther's most enduring fame rests on the immense amount of systematic work which he did among the lower vertebrates. The Catalogue of Fishes in the British Museum in eight volumes is a monument of erudition and research, and it was followed by many other reports, catalogues, and publications on fishes and reptiles, in quick succession, but his claim to the gratitude of ornithologists undoubtedly rests on the Catalogue of the Birds in the British Museum, which he initiated and carried through. Except for the last issued—the 26th, the whole of the twenty-seven volumes were brought out under his superintendence and the prefaces signed by him. Another claim to the gratitude not only of ornithologists, but of all zoologists, is that Günther was the originator and founder of the 'Zoological Record,' the first six volumes of which (1864–1870) he himself edited.

Dr. Günther became a member of the B.O.U. in 1876, and resigned only in 1910, but he did little direct work in ornithology. He contributed a paper to 'The Ibis' in 1865, in which he described as new the form of the Long-tailed Tit inhabiting Asia Minor, now known as *Ægithalos caudatus tephronotus*, and put in a plea for the recognition of Moehring's generic name *Orites* for this group. In 'The Ibis' for 1886 (p. 207) he defends his action in having the Golden Orioles in the mounted groups in the Natural History Museum represented with cherries in their bills, and asserts that they devour that fruit in considerable quantities, according to his own observations. One other short paper ('The Ibis,' 1896, p. 411) deals with the curious tubercular pad on the "heel" of the young Wryneck.

After his retirement from the Museum, Günther took up his residence near Kew Gardens, and there devoted a great deal of time to Aviculture. He was very successful in breeding some of the more difficult species, such as the Red-backed Shrike, and contributed a number of articles on this subject to the 'Avicultural Magazine.' Günther became a Fellow of the Royal Society in 1867, and served as a Vice-President in 1875–6, and in 1878 he received one of the gold medals. He was President of the Biological Section of the British Association in 1880, and of the Linnean Society from 1898 to 1901. He became a Fellow of the Zoological Society in 1862 and served on its Council almost continuously from 1868 to 1905, and as Vice-President from

1874–1905. It is as a great systematist that Günther will be remembered, but, as is shown by his work 'An Introduction to the Study of Fishes,' he took a good deal of interest in structure and life-history and other problems apart from the discrimination of species and classification. He was twice married, and his eldest son, Mr. R. T. Günther, who is a fellow and tutor of Magdalen College, Oxford, is a distinguished zoologist, antiquary, and writer.

XVIII.—*Notices of recent Ornithological Publications.*

Baker on Indian Pigeons.

[Indian Pigeons and Doves. By E. C. Stuart Baker, F.Z.S., F.L.S., M.B.O.U. Pp. xvi+260, 27 plates. London (Witherby). 8vo. 50s.]

No separate work on the Columbidæ of India has hitherto appeared, and we must congratulate Mr. Stuart Baker on having followed up his well-known 'Indian Ducks and their Allies' with a companion volume on the Pigeons. No one is more competent to deal with this subject than our author, since he has not only spent the greater part of his life in India, where he has had unrivalled opportunities of observing and studying the birds in their native haunts, but he has also a very good Museum-knowledge of the birds, and is thus enabled to present a very complete epitome of how and where to shoot and collect Indian Pigeons, but also of our present knowledge of their nomenclature and classification.

The total number of species and subspecies dealt with numbers fifty-one, and about half of them are depicted on the twenty-seven coloured plates specially prepared by Mr. Grönvold.

Mr. Baker discusses at some length the question of whether the typical Blue Rock-Pigeon (*Columba l. livia*) ever occurs in India. He finds in the British Museum only two examples (from Ladak) which he believes are really identical with the European form, while a good many others which have been referred to it are really intermediate between this and the true Indian subspecies (*C. l. intermedia*) with the grey lower back, but there can be no doubt that Pigeons are so frequently domesticated and have such a power of flight that they must often defeat the endeavours of the most skilful "splitter."

Pigeons in India, though hardly considered as game-birds, are frequently sought after by sportsmen, and it requires pretty good shooting to make a good bag of Green Pigeon.

We must congratulate both author and publisher on the appearance of this fine work, which should be on the shelves of every Indian sportsman and naturalist.

Brasil on Shore and Sea Birds.

[Les oiseaux d'eau, de rivage et de marais de France, de Belgique et des Iles Britanniques, par L. Brasil, Professeur à la Faculté des sciences de Caen. Pp. 1–339, 142 figures. Paris (Baillière), 1914. 8vo. Prix 6 Fr.]

The first object of this little book is to enable sportsmen and others to identify any strange birds which they may meet with; and to this end very full dichotomous keys are given, in which the more conspicuous external characters of the birds are made use of. M. Brasil also hopes that his work may perhaps stimulate the interest of the French nation in ornithology and the study of birds. Formerly this interest was widespread, and there were many professional and amateur ornithologists in France, but this can hardly be said to be the case at present.

The nomenclature followed is generally that of Hartert and the other authors of the Hand-list, but we observe that the author cannot bring himself to call the Mallard *Anas platyrhynchos* or the Crane *Megalornis grus*, though he attributes the Grebes to *Colymbus*, which, however, does not date from Brisson 1760, but from the 1758 edition of Linnæus.

The text is illustrated with a number of figures showing generic characters derived from beaks and feet, as well as reproductions from the well-known and artistic drawings of Kuhnert.

Brasil on the King Island Emu.

[L'Émeu de l'île King. L. Brasil. Bull. Soc. Linn. Norman. Caen, (6) vi. 1913, pp. 76–97.]

There are known to have existed within historic times two insular races of the Emu apart from the forms found on the mainland of Australia and on Tasmania.

Péron, the naturalist of the French expedition which visited the Australian seas between 1800 and 1804, found an Emu very abundant on King Island in Bass Straits between Victoria and Tasmania, as well as on Kangaroo Island, which lies off the coast of South Australia. In a coloured plate, no. xxxvi. of his report ('Voyage de Découvertes aux Terres Australe'), he figures two Emus, one of which has a black breast the other a white breast, which are stated to be male and female respectively and to have been taken on Kangaroo Island. The only known example of the Kangaroo Island Emu now existing is one of those brought to Europe by Péron, which is in the Paris Museum, and which matches very well the black-breasted bird of the plate.

Mr. Mathews, when writing his 'Birds of Australia,' believed that Péron's plate must represent two distinct species of birds, and thought that the white-breasted bird must be the now totally extinct form formerly existing on King Island.

Recently a number of semi-fossil bones of the Emu have been found on King Island, and have been examined by Prof. Baldwin Spencer, who gave them, in consequence of the smaller size, the name *Dromaius minor*. With this semi-fossil Emu Mathews at first identified the white-breasted bird of Péron, but he subsequently gave it a separate name, *D. spenceri*, and in addition to that Col. Legge has called it *D. bassi*.

In the present paper M. Brasil, who has been able to examine some manuscripts connected with Péron's voyage both at Havre and at Paris, endeavours to show that it is extremely unlikely that Péron and Lesueur, who were for 13 days in December 1802 on King Island, ever obtained any examples of Emu at all, as they were landed without arms, provisions, or shelter, and the weather was so bad during that time, that the ships had to put off from the island.

He believes that both the individuals figured on Péron's plate came from Kangaroo Island, and that there was considerable sexual dimorphism in this species, not only in dimensions but also possibly in plumage, and that the measurements of the semi-fossil bones of the King Island Emu seem to show that the same variation in dimensions also existed among the Emus of that island.

Faxon on Brewster's Warbler.

[Brewster's Warbler (*Helminthophila leucobronchialis*): a Hybrid between the Golden-winged Warbler (*Helminthophila chrysoptera*) and the Blue-winged Warbler (*Helminthophila pinus*). By Walter Faxon. Mem. Mus. Comp. Zool. Harvard Coll. xl. 1913, pp. 311–316.]

This is a continuation of a paper previously published in the same periodical (*vide* 'Ibis,' 1911, p. 760), and contains the results of Mr. Faxon's observations in 1913 on the Warbler population of a certain swamp near Lexington, Mass. Here in early May a male Golden-wing was observed mated with a female Blue-wing. The birds were constantly watched, and the young first observed about June 15; by July 12 the young birds had lost their nesting-plumage completely, and were found to be undoubted examples of the form known as *Helminthophila leucobronchialis*, which is thus proved to be a hybrid. Another pair, also closely watched (a male Brewster's and a female Golden-wing), produced a brood the majority of which were Brewster's, but one was a Golden-wing male. The latter and one of the Brewster's were banded, and it is hoped they may return this next summer to the same swamps, when Mr. Faxon and Dr. Tyler hope to extend their observation over three generations.

This and the previous paper are of special interest to all students of heredity and Mendelian law, and should be carefully read through by them, as such cases as these can be but seldom observed in natural conditions.

Fleming on the Birds of Toronto.

[Birds of Toronto, Ontario. By James H. Fleming. Reprinted from 'The Natural History of the Toronto Region,' 1913, pp. 1–26.]

Mr. Fleming, who is a Colonial Member of the B. O. U., has here reprinted his list of the birds of the neighbourhood of Toronto originally published in the 'Auk' for 1906 and 1907. The birds are 292 in number, and with each species is given its status—resident, migrant, accidental, etc., etc.

Flower on the Zoological Service in Egypt.

[Report on the Zoological Service for the year 1912, in which is included the 14th Annual Report of the Giza Zoological Gardens. By Capt. S. S. Flower, Director. 58 pp., 12 pls. Cairo (Govt. Press). 1913, 8vo.]

In this report some account is given of the new laws promulgated in 1912 for the protection of the native fauna of Egypt. A licence is now required to shoot birds or capture them with nets, and the destruction or capture of a certain number of wild birds useful to agriculture is entirely forbidden. The schedule gives only the French and Arabic names, and among them are Larks, Orioles, Wagtails, Flycatchers, Pipits, Bee-eaters, Hoopoes, and Plovers.

The Cattle Egret, *Ardea ibis,* which is known to the natives as "Abu gerdan" (*i. e.* father of ticks), and which was some years ago a most characteristic feature of Egyptian agricultural life, has of late years been almost entirely exterminated by plume-hunters, and only one breeding-colony is now known to exist in Lower Egypt. This is now carefully protected and watched.

An attempt is also being made to found fresh colonies of these birds by keeping specimens in large aviaries and eventually giving them their liberty. Four of these have already been built for this purpose in different parts of the country.

Grinnell and Swarth on the Avifauna of the San Jacinto Mountains.

[An account of the Birds and Mammals of the San Jacinto area of Southern California, with remarks upon the behaviour of geographic races on the margins of their habitats. By J. Grinnell & H. S. Swarth. University of California Publ. Zool. vol. 10, 1913, pp. 197–406, pls. 6–10.]

The San Jacinto Mountains are the southernmost part of the coast-range of California, and are cut off on the north by the San Gregorio Pass, through which runs the Southern Pacific Railway to Los Angeles. They rise to a height of 10,800 feet and thus include a considerable area of what is termed by Merriam, the Boreal zone, as is illustrated in the map accompanying this paper.

Messrs. Grinnell and Swarth spent the great part of the summer of 1908 in exploring this region, which was previously comparatively little known, and they give in this memoir a complete account of the Mammal and Bird fauna, as well as a number of interesting general observations and deductions.

Out of 169 species of birds met with they found 22 belonging to the boreal fauna; and, on comparing this with the numbers of species found in other isolated boreal areas in southern California, they come to the conclusion that "the smaller the disconnected area of a given zone the fewer the types which are persistent therein," so that some of the boreal areas further north have a much more restricted boreal fauna owing to their smaller size.

Another matter discussed is the contrast of the fauna to the west and east of the San Jacinto range: on the west side the climate is comparatively moist and the slopes are gradual, while on the east the slopes are so steep that the range of life-zones from the Lower Sonoras through the Transition to the Boreal is all crowded into about three miles, while the country at the base of the mountains is one of the driest and most arid in the world.

Gurney's Norfolk Bird-diary.

[Ornithological Report for Norfolk (1912). By J. H. Gurney, F.Z.S. Zoologist, 1913, pp. 161–181.]

Mr. Gurney's annual report always contains some matters of interest. This year a wonderful migration-rush was witnessed by Messrs. Rivere and Long on the north coast of Norfolk, near Hunstanton. It seems to have begun on the evening of Nov. 6, when the wind was light from the south, and to have continued through the night and most of the next day. A continuous stream of birds was noticed flying south past Hunstanton, consisting of Hooded Crows, Rooks, Jackdaws, Lapwings, Fieldfares, Starlings, and small Finches and Larks. Curiously enough, a somewhat similar migration was noticed on the 5th at Heligoland and at Rossitten on the Baltic.

The Spoonbills still come to Breydon Broad, where we are glad to hear they are now protected by a paid watcher, but so far they do not appear to have bred.

Among the rarities noticed in 1912 was a Squacco Heron, shot on July 5 ; this has not been observed in Norfolk for fifty years.

The Terns are becoming more numerous at Blakeney Point now that a watcher has been put on by Mr. Quintin Gurney. It is estimated that there were 350 nests of the Common and 200 of the Lesser there this last season.

Lowe on Sea-birds.

[Our common Sea-birds: Cormorants, Terns, Gulls, Skuas, Petrels, and Auks. By Percy R. Lowe, B.A., M.B., B.C. (Cantab.). Pp. xvi+310; many photographs. London ('Country Life'): n. d., l. 8vo. 15*s.*]

When one first glances over this new work by Dr. Lowe and notices the beauty and excellence of the photographs, one is at first inclined to ignore the letterpress, but this would be a great mistake, as Dr. Lowe has here given us a charming and rather unusual volume which is distinctly popular in character, but which at the same time contains many facts not generally known, as well as many suggestions and ideas of a novel and refreshing type not usually met with in works of this character. He is also able to express himself in a very clear and easy style, which will appeal equally to the specialist and the general reader.

Dr. Lowe commences by pointing out what is often not realized by the land-naturalist, that so-called sea-birds easily resolve themselves into two great groups according to their habitat. In the first category we have the Gulls and Cormorants, which gather their food either from the land or from the shallow seas in its immediate neighbourhood ; they are never (except perhaps the Kittiwake) found more than a few miles from land. If you are leaving, for instance, such a port as Cape Town on a voyage for England, you lose sight entirely of all the Gulls so numerous in Table Bay when only a few miles out to sea. In the other category come the Petrels and Auks; these are the true sea-birds and may be met with at any distance from the land, and, indeed, seldom come near the land except in the breeding-season. Their food consists entirely of nekton and plankton, the small organisms which either swim or drift about on the surface of the sea at considerable distances away from land.

The Black-headed Gull (*Larus ridibundus*), now so familiar to Londoners since so many spend the winter and spring on the lakes in St. James's and other parks, penetrates far inland up the rivers, while in the summer it is on its nesting-ground, often many miles from the open sea.

On the Lake of Geneva the Black-headed Gull is to be found all the year round, and there are probably many individuals which never leave the lake throughout the whole year.

In contrast to the Black-headed Gull is the Kittiwake of the northern sea; a true sea-bird, it gets its living from the plankton of the north, disdaining the garbage and offal thrown up along the shore which satisfies most of the other Gulls.

From time to time there comes, generally during the winter, a great rush of Little Auks to our eastern shores. The birds arrive exhausted, and are picked up in countless numbers dead or dying, not only on the coast but far inland. Dr. Lowe endeavours to explain the "wreck of the Little Auk" by the following chain of reasoning:—The Little Auk feeds almost entirely on the plankton, the surface-floating organisms—small crustaceans, worms, larval forms of Echinoderms and Mollusca, which exist in countless millions, especially in the northern seas. The plankton is very sensitive to untoward atmospheric or marine conditions. High winds, cold, excess of fresh water due to melting ice, all tend to drive the plankton to below the surface, and the Auks, unable to procure food and thus weakened, are driven south by the northerly gales in packs and endeavour to find quieter conditions in the North Sea, where the food-supply and other matters are quite different; finally they are driven on to the coast and inland, enfeebled for want of food, as those picked up have almost invariably empty stomachs. Such is Dr. Lowe's interpretation of the "wreck of the Little Auk."

Some contributions from other authors have been included in this volume. Mr. Bentley Beetham writes a chapter on the flight of birds, Messrs. W. P. Pycraft and W. R. Ogilvie-Grant each treat of the Cormorant. Mr. A. J. R. Roberts sends an account of the breeding-place of the Skua on the island of Foula, and Mr. C. J. King describes a night spent by him on Annet Island in the Scillies, where the Manx Shearwaters nest.

Altogether it is an unusual work both as regards its letterpress and illustrations, most of which have appeared in 'Country Life,' and therefore need no further commendation.

Mearns on new African Birds.

[Descriptions of ten new African Birds of the Genera *Pogonocichla, Cossypha, Bradypterus, Sylvietta, Melaniparus*, and *Zosterops*, by Edgar A. Mearns. Smiths. Miscell. Coll. vol. 61, no. 20, 1913, pp. 1–8.]

The title of this paper sufficiently indicates its contents. All the new forms are described as subspecies, and all are from British East Africa and Abyssinia, and have been obtained by the many recent expeditions to Africa from the United States, including that of Dr. W. L. Abbott, which took place so long ago as 1888.

Nicoll on the Egg of the Sudan Crowned Crane.

[Some Notes on the Eggs of the Sudan Crowned Crane, *Balearica pavonina ceciliæ*. By Michael J. Nicoll. Cairo Scientific Journ. vii. 1913.]

In a short note Mr. Nicoll describes the eggs of the Sudanese form of the Crowned Crane which were laid in the Giza Zoological Gardens in the autumn of 1910. They appear to resemble those of the South African form *B. regulorum* in being white with a greenish tinge, and differing from those of the Grey Crane, which are blotched with reddish-brown.

Ogilvie-Grant on British Game-birds.

[The Gun at Home and Abroad. British Game-birds and Wild-fowl. By W. R. Ogilvie-Grant and others. Pp. xii+444. 30 coloured plates. London (London and Counties Press Assoc.), 1912. 4to.]

This work is intended more for sportsmen than for naturalists, and deals at considerable length with the British Game-birds—the Capercaillie, Black and Red Grouse, Pheasant, and Partridge. Mr. Ogilvie-Grant, who has undertaken the natural history portion of the work, has managed to include a good deal of matter not generally found in books of this nature, such as an account of the eclipse-plumage of the Capercaillie and of other game-birds. In the chapter on the Pheasant there is a useful and carefully revised list of all the known forms divided into natural groups, and also a table showing the geographical distribution of each species or subspecies, though the limits of these are yet far from satisfactorily settled. A good many of the various forms have been imported and turned down in English coverts at one time or another, so that our present British strain of Pheasant is extraordinarily complex.

Less space is devoted to the Water-fowl, of which, however, Mr. O.-Grant gives a most comprehensive key, which he believes will enable any British-killed Duck to be unerringly identified.

The articles on shooting and rearing are chiefly by Col. R. F. Meysey Thompson and Major A. Acland Hood, while the illustrations from the brush of Mr. G. E. Lodge are full of charm, and show the plumage-changes with great detail.

Ogilvie-Grant on a new Lark.

[On a new Lark from the Cape Province. By W. R. Ogilvie-Grant. Annals S. Afr. Mus. xiii. 1913, p. 41.]

Calandrella sclateri capensis, subsp. n., from Philipstown in the Cape Province, is here described, which differs in its darker markings and more blackish bill from the typical *C. sclateri* obtained in Great Namaqualand.

Rothschild and Hartert on New Guinea Birds.

[List of the Collections of Birds made by Albert S. Meek in the lower ranges of the Snow Mountains, on the Eilanden River, and on Mount Goliath during the years 1910 and 1911. By the Hon. Walter Rothschild, F.R.S., Ph.D., and Ernst Hartert, Ph.D. Nov. Zool. vol. xx. 1913, pp. 473–527.]

Mr. Meek's personal adventures have been told in his book 'A Naturalist in Cannibal Land,' and in this memoir an account is given of the large collection of birds which he obtained in southern Dutch New Guinea for the Tring Museum.

The Letakwa, where he collected in 1910, is a tributary of the Oetakwa, the river by which Dr. Wollaston has recently reached the snows of Mt. Carstensz, but on this river Mr. Meek did not reach a greater elevation than 3000 ft. In the following year he joined a Dutch exploring party and ascended the Eilanden river some miles to the east of the Oetakwa, and finally made a camp at about 6500 ft., where he obtained large collections of birds and insects.

Messrs. Rothschild & Hartert have already described a number of new forms in the Bulletin of the Club, and in the present paper they add new species of *Sericornis* and *Pitohui* and new subspecies of *Astur*, *Pœcilodryes*, *Machærirhynchus*, *Sericornis*, and *Philemon*.

Among the Birds of Paradise are adult males and females of *Astrapia splendidissima* from Mt. Goliath, according to Meek "the most beautiful Bird of Paradise that I know," *Falcinellus striatus atratus*, also from Mt. Goliath and new, the rare *Pteridophora alberti* with its wonderful blue appendages, and females of *Loboparadisea sericea* previously described by Rothschild, the exact locality of which was previously unknown.

Salvadori and Festa on the Birds of Rhodes.

[Escursioni Zoologiche del Dr. Enrico Festa nell' Isola di Rodi. II. Uccelli. T. Salvadori ed E. Festa. Boll. Mus. Zool. Anat. comp. Torino, xxviii. 1913, no. 673, pp. 1–24.]

Italian naturalists have lost no time in exploring their new possessions among the islands of the Ægean Sea, and Dr. Festa, during a recent excursion to the Island of Rhodes, has made a collection of some 334 birds, representing altogether 107 species. Except for the late Mr. C. G. Danford, who, during his wanderings in Asia Minor, made short excursions to this island (see 'Ibis,' 1880, p. 82), no other naturalist seems to have visited Rhodes.

Count Salvadori states that the facies of the avifauna of this island is decidedly European, but he has been able to discover two birds which he considers worthy of specific distinction—we must remember that Count Salvadori does not hold with subspecies ; these are the Jay and the Robin, which he here describes as *Garrulus rhodius* and *Erithacus xanthothorax*.

Salvadori: a Bibliography of his Writings.

[Elenco degli scritti di Tommaso Salvadori 1863–1900 e Secondo Elenco degli scritti 1901–1913. Torino (Stamp. Reale), 1900 & 1913.]

A list of the titles of Count Salvadori's papers and works sent to us contains 320 titles. The first, dated 1863, is a letter addressed to 'The Ibis' for that year "on some Italian birds." Almost all the others deal with ornithological questions, and give a vivid idea of the remarkable output of work in ornithology accomplished by our revered Italian colleague.

Shufeldt on fossil birds.

[Fossil Feathers and some heretofore undescribed Fossil Birds, by R. W. Shufeldt, M.D. Journ. of Geology, xxi. 1913, pp. 628–652, 12 text-figs.]

At Florissant, in the Rocky Mountains of Colorado, there are some exceedingly interesting Tertiary deposits of Oligocene age, in which have been found very large numbers of well-preserved remains of the land fauna and flora of those times.

These beds have long been known to American palæontologists, and of late years have yielded a rich harvest to Prof. T. D. A. Cockerell, of the State University of Colorado.

In this paper Dr. Shufeldt figures and discusses the imprints of a number of feathers obtained both recently and some time back from these beds. He also reproduces the figure of the earliest Passerine bird known from North America, which was described by Dr. J. A. Allen in the 'Bulletin' of the U.S. Geol. & Geogr. Survey so long ago as 1878 under the name of *Palæospiza bella*. Unfortunately the original slab containing the fossil has entirely disappeared.

Other better-preserved remains, now in the Peabody Museum at Yale, from the Green-river beds of Wyoming are here described under the names of **Hebe schucherti**, gen. et sp. n., and **Yalavis tenuipes**, gen. et sp. n. The first of these indicates a small Passerine bird which Dr. Shufeldt believes to be referable to the family Pteroptochidæ, the members of which are distinguished from all other Passerine birds by having the posterior margin of the sternum doubly emarginated as in the Woodpeckers. They are now confined to America south of Costa Rica.

Of the position or relationship of the second new genus our author gives us no hint beyond that it is a "highly specialized Passerine."

Swarth on Californian Geese.

[A Study of a Collection of Geese of the *Branta canadensis* group from the San Joaquin Valley, California, by Harry S. Swarth. Univ. Cal. Publ. Zool. vol. 12, 1913, pp. 1–24, pls. 1–2, 8 text-figs.]

There is considerable confusion in regard to the various forms of the Canada Goose occurring not only in California but in other parts of the United States. The breeding-ranges of the various forms are far from accurately known, and variation is very considerable, so that the three subspecies usually occurring in North America are difficult to differentiate.

Mr. Swarth believes that *B. c. occidentalis*, generally stated to breed in California, is a resident with little or no migratory movement, and is confined to the humid northwest coast-region northwards to Alaska, and only occurs accidentally in California at all. Of the other three subspecies—*B. c. canadensis*, *B. c. hutchinsi*, and *B. c. minima*—only the first-named has been found breeding in California; there is a single summer bird with eggs, taken at Lake Tahoe at a considerable elevation, by Ray ('Condor,' 1912, p. 70), in the Museum of Vertebrate Zoology of the University of California; while all three forms occur mingled together during the winter months in the San Joaquin valley and elsewhere in the State.

Thomson on Bird-marking in Scotland.

[Aberdeen University Bird-Migration Inquiry: First Interim Report (1909–1912). By A. Landsborough Thomson, M.A., M.B.O.U. Scottish Naturalist, 1912, pp. 153, 169–174, 217–224, 241–248; 1913, pp. 29–35, 79–84, 121–131.]

The Scotch bird-marking scheme was started under the auspices of Mr. A. L. Thomson early in 1909, and this report contains a complete account of all the birds recaptured up to the date of writing, arranged in systematic order. The rings used in this enquiry are of aluminium without any special clasp or fastening, and are marked "Aberdeen Univ." with a number. More than 200 helpers have taken part in the actual marking of birds, and by far the greatest number of birds have been marked in Aberdeenshire. As Mr. Thomson justly states, it is far too early as yet to deduce any final results, but we notice one interesting case of a hand-reared young female Mallard, marked in Aberdeenshire in June 1910, which was recaptured in July 1911 in northern Denmark, where it was described as a mother in charge of a brood of fifteen ducklings.

Todd on new Neotropical Birds.

[Preliminary Diagnoses of apparently new Birds from Tropical America. By W. E. Clyde Todd. Proc. Biol. Soc. Washington, xxvi. 1913, pp. 169–174.]

The Carnegie Museum at Pittsburg continues to acquire fresh collections of zoological material from the rich collecting-grounds of South America, and in this short paper Mr. Clyde Todd has drawn up preliminary descriptions of

33 new forms, most of them subspecies which he believes to be new. They are from collections made by Mr. M. A. Carriker in Colombia and Venezuela and by José Steinbach in Bolivia.

A new Humming-bird from Bolivia—*Microstilbon insperatus*, gen. et sp. nov.—is sufficiently distinct from the members of the allied *Chætocercus* to warrant the creation of a new genus; while the last novelty described in the paper is a Rail, *Rallus longirostris leucophæus*, subsp. n., from the Isle of Pines off the coast of Cuba.

Tschusi on Austro-Hungarian Ornithology.

[Ornithologische Literatur Osterreich-Ungarns, Bosniens und der Herzegovina 1912, von Viktor Ritter v. Tschusi zu Schmidhoffen. Verhandl. der k. k. zool.-bot. Ges. in Wien, 1913, pp. 184–211.

Ornithologische Kollektaneen aus Österreich-Ungarn. xxi. 1912. *Ibid.* Zool. Beobacht. liv. 1913.

Ankunfts- und Abzugsdaten bei Hallein (1912). ix. *Ibid.* Ornith. Monatsschr. 1913, pp. 208–214.]

In the first of these papers von Tschusi gives his annual record of the bird-literature of the Austro-Hungarian Empire. The entries are all made under the authors' names in alphabetical order, and include papers in the German, Hungarian, Czech, and Croatian languages.

In the second contribution von Tschusi has extracted from sporting and other newspapers such facts as he considers worthy of more permanent record, and these are arranged in systematic order under the species to which they refer.

The third paper contains the dates of arrival and departure of migratory birds in the grounds of the Villa Tännenhof, near Hallein in Upper Austria, where the residence of the author is situated.

Tyler on the Birds of Fresno, California.

[Some Birds of the Fresno District, California. By John G. Tyler. Cooper Ornithological Club. Pacific Coast Avifauna, no. 9, pp. 1–114. Hollywood, Cal., 1913.]

The town of Fresno lies in the great central valley of California between the coast-range and the Sierra Nevada, and this paper deals with the birds found in the immediate neighbourhood. It is a low-lying district, having an average elevation of about 400 feet, and the majority of the birds found within the limits belong to Lower Sonoran life-zone. The species enumerated are 161 in number, and ample field-notes are given in each case.

Van Pelt Lechner on the Eggs of the Birds of Holland.

[Oologia Neerlandica. Eggs of Birds breeding in the Netherlands. By A. A. van Pelt Lechner. With coloured plates made direct from specimens in the author's collection. Parts i.–vi. The Hague (M. Nijhoff), 1911–1913. (Size 10″ × 7¾″.) Subscription price for the complete work, £7 7*s.*]

Heer van Pelt Lechner's work is now approaching completion, as 160 plates out of the total number of 191 have already been issued, and it is now possible to form some idea as to the value and scope of this important contribution to oology.

The work consists of three parts: an atlas of plates illustrating the eggs of every species which has bred in Holland; a page of text to face each plate, with briefly tabulated information as to the colour, size, weight, and shape of the eggs, and concise notes on the nest and breeding-habits of each species, but containing no information as to the breeding-range in Holland; and thirdly, oological studies with regard to the structure, colour, and characteristics of the eggs of each family.

When complete the work will contain 667 figures of eggs, of which 608 will be reproduced in colour, and the remaining 59, which represent white eggs, by photography. The latter may be briefly dismissed, as they have the usual defects of photographs, and give little idea of the texture and none of the gloss of the eggs in question. The coloured plates, however, demand fuller notice. Each egg is separately figured and mounted, so that in some cases there are as many as six figures on one plate, each separately reproduced by three-colour process. By this system the author has ensured perfect focussing for each egg. The screen-work, though readily seen on microscopic examination, is scarcely perceptible to the eye, and, in consequence, the results are excellent and far ahead of those attained in Mr. Dresser's work, which were in some cases very disappointing, especially where large numbers of small eggs were photographed together. These figures have all the brightness and purity of colour that one sees in the eggs themselves and generally fails to find in the reproduction. When we come to the choice of specimens figured, we find the plan of confining the selection to one collection has resulted in the figuring in many cases of only the common types. Occasionally we find that Heer van Pelt Lechner's collection includes a fairly wide range of variation (as in the case of *Emberiza citrinella*) ; but the four eggs figured of *Corvus frugilegus* might have all been taken from a single tree in any rookery, and give no idea of the variation in this species, and the same may be said of many others. As illustrations of typical eggs, they are, however, in most cases excellent, and in some instances have never been excelled; but we must make an exception to plate 43, which purports to represent the eggs of *Parus cristatus mitratus*. The writer has taken the eggs of this race personally in North Brabant, and has before him a series of the eggs of two or three other forms of Crested Tit; and in every case they are heavily marked with red with a very decided tendency to a zone at the large end. Even if the eggs figured are genuine, which we greatly doubt, they are quite abnormal, and should have been excluded from a work in which the usual types are figured. The illustrations of the eggs of *Phylloscopus collybita* (plate 57) are also scarcely characteristic of this species.

When we come to consider the letterpress which accompanies each plate, we note one omission which it is not yet too late to remedy, but which may render the whole work one of only secondary importance if not attended to. Although each figure is distinguished by a letter, there is no information whatever given as to the origin of the specimens figured. They are all, we believe, from the Van Pelt Lechner collection, and probably in most cases of Dutch origin, though it is doubtful whether the eggs figured of *Turdus pilaris*, *T. torquatus*, and *Acrocephalus aquaticus* were taken in Holland. But in any scientific work on oology each figure should be *the portrait of some individual egg*, and information on this point is indispensable. The beautiful series of illustrations of eggs of *Cuculus canorus* is almost valueless without details as to the foster-parents in each case, and we note that of the three figures given of the eggs of *Lanius senator*, (*b*) is of the rare erythristic type and (*c*) shows a distinct tendency towards it. Yet there is no hint of this in the accompanying letterpress, where the surface-markings are described as "grey or greenish brown." It would be interesting to learn whether the red type occurs in Holland, as it undoubtedly does in the Mediterranean region.

The studies on egg-structure and family characteristics form an original feature of this work and are extremely interesting, especially the researches of the author on the distribution of colouring-matter in the different layers of the shell, a subject to which little attention has been given up to the present, though it is undoubtedly to research in this direction that we must look for an explanation of many of the problems in egg-coloration. We trust that in the forthcoming part of this work Heer van Pelt Lechner will publish the localities and dates of all the specimens figured, as without this information, no illustrations of eggs, however beautiful in themselves, can be considered as satisfactory; and since the study of local races has made such progress, these details are indispensable. F. C. R. Jourdain.

Vaucher on the Greek Partridge of Canton Ticino.

[Observations sur quelques Bartavelles du bassin du Tessin (*Caccabis saxatilis biedermanni* Reich.), par Alfred Vaucher. Boll. Soc. ticinese Sci. nat. viii. 1912, pp. 1–3.]

Two years ago Dr. Reichenow (Ornith. Monatsb. 1911, p. 35) described the Greek Partridge inhabiting the valley of the Ticino on the southern slope of the Alps as distinct from that of the Canton Valais on the other side of the range.

M. Vaucher, in a letter addressed to Sig. Ghidini, who originally procured the examples examined by Reichenow, criticizes the grounds on which the species was based; but subsequently on other characters, chiefly of measurement, concludes that the Partridges of Valsolda, in the basin of the Ceresio, a neighbouring valley, may perhaps be distinguishable; and he therefore admits *Caccabis saxatilis biedermanni* as a distinct subspecies inhabiting the valleys on the Italian slopes of the Alps.

Annals of the Cyprus Nat. Hist. Soc.

[Annals of the Cyprus Natural History Society. Number iv. 1912–13. Nicosia, Cyprus, 1913.]

It is to be hoped that this young society may be able to survive the loss of its founder, Mr. J. A. S. Bucknill, who has left Cyprus for Hongkong, where he now occupies the post of Attorney-General; but the present instalment of the journal, though covering two years, is rather thin. It is mostly taken up with observations and records on the birds during the years 1912 and 1913, made by Messrs. F. R. S. Baxendale and C. B. Horsbrugh, who have added a considerable number of records to the Cyprus list, such as *Buteo ferox* and *Aquila pomerina*; while the Blue Rock-Thrush and the Palestine Warbler (*Sylvia melanothorax*) have been found nesting on the island for the first time.

Bird Notes.

[Bird Notes. The Journal of the Foreign Bird Club. Edited by Wesley T. Page. Vol. iv. for 1913.]

Most of the articles in this Journal are of special interest to aviculturists, and consist of practical directions for keeping and breeding birds in aviaries; there are also many useful hints for the planning and construction of the aviaries themselves.

Another interesting feature is a series of beautiful coloured plates by Goodchild. These include in the present volume *Zosterops palpebrosa*, *Irena turcosa*, *Psittacus incertus*, *Pytelia melba* and *P. afra*, and *Muscicapa parva*. There are also a number of life-like and characteristic photographs by Mr. H. Willford. The notes accompanying these are all written by the editor, Mr. W. T. Page, who has also compiled an interesting list of all the hybrids which have been reared in captivity in England.

Other articles are by Dr. Hopkinson, who continues his notes on the birds of the Gambia, and Mr. H. Whistler, who sends an interesting photograph of an example of *Gypaëtus barbatus*, which he reared from a nest found in the Punjab Salt Range in India, and which is now in the Zoological Gardens. He also writes on the birds noticed by him when travelling from Trieste to Bombay. Finally, the Hon. Mary C. Hawke contributes some notes on the birds she saw in the Argentine during a recent trip there.

The Condor.

[The Condor. A magazine of Western Ornithology. Vol. xv. 1913. 6 nos., 246 pp. Edited by Joseph Grinnell. Hollywood, Cal., U.S.A.]

The most attractive feature of this journal is undoubtedly the very beautiful reproductions of artistic photographs with which it is illustrated. In this respect the 'Condor' stands alone among scientific ornithological periodicals. Some of the best of these come from the camera of William Leon Dawson, joint author of 'The Birds of Washington,' not the capital but the State of the north-west United States (*cf.* 'Ibis,' 1910, p. 360). The frontispiece of the present volume and several additional smaller text-figures illustrate Mr. Dawson's great skill, and this is specially the case with a very rare Wader (*Aphriza virgata*), whose breeding-range still remains to be discovered, but which is occasionally to be observed on the beach near Santa Barbara in California. In the March–April number it is announced that Mr. Dawson, with the help of other Californian ornithologists, is preparing a sumptuous work on the Birds of California, to be illustrated with coloured plates by a Mr. Allan Brooks, who is a son of a well-known co-worker with the late Mr. Allan O. Hume of Indian fame, Mr. W. E. Brooks.

Mr. E. R. Warren (p. 121) discusses the question of whether, as an old superstition has it, bed-bugs are found in Swallow's nests. He finds that though other species of the genus *Acanthia* are often parasitic on various species of birds, the true *A. lectularia* never associates with Swallows, which are and should be encouraged to build in the neighbourhood of houses, as they are invaluable for reducing the plague of flies so common in the west of America.

The veteran Dr. R. W. Shufeldt (p. 138) contributes some good photographs, taken by himself, of the eggs of Limicoline birds in the collection of Mr. E. J. Court of Washington, D.C., and Mr. H. S. Swarth (p. 167) revises the Californian forms of the Spotted Towhee (*Pipilo maculatus*) occurring in California, and finds it necessary to describe a new form, *P. m. falcinellus*, inhabiting the central and northern-central portions of the State. As in the case of many other birds, the alternations of moist and humid conditions with those of great aridity in different parts of the State cause a considerable amount of variation and the formation of numerous distinguishable races.

Some other papers of special interest, especially those of Mr. Grinnell, have already been referred to separately in 'The Ibis' for last year, but there are in addition a number of articles of more or less local interest, not only on the birds of California, but also on those of Utah, Montana, and other western States, well worth the attention of such of our members who are interested in American ornithology.

Le Gerfaut.

[Le Gerfaut. Revue belge d'Ornithologie. Publiée par la Société ornithologique du Centre de la Belgique. Bruxelles (F. van Buggenheodt). 3e Année, Octobre 1913.]

We have recently received a copy of the Belgian monthly journal of ornithology, which, though new to us, seems to be already in its third year. It is edited by M. Marcel de Contreres, and appears to be the official organ of several ornithological societies and clubs existing in Belgium. Some of these are avicultural in their aims, some profess to deal with the more scientific aspects of ornithology, but all are interested in birds and bird-life.

In the number now before us, which consists of about 15 pages of text, there is an interesting article containing field-notes and other observations on the Grasshopper Warbler, which, though not generally considered more than an accidental visitor to Belgium, is, according to M. Alfred Sacré, far from uncommon in the Belgian uplands in the neighbourhood of Spa on the Luxemburg borders, where it is known to the natives under the Wallon name of "Cretion" (cricket) or "Mousse-es-brouire" (hider in the heath). In these regions this bird is a regular summer visitor.

In another interesting contribution M. Auguste Tant completes a series of articles on the food of the Belgian birds of prey, as deduced from an examination of their stomach-contents.

Irish Naturalist.

[The Irish Naturalist. A Monthly Journal. Vol. xxii. 1913, nos. 1–12.]

The articles of ornithological subjects in last year's volume are not numerous or of great importance. Mr. R. Warren (p. 174) communicates some observations on the northward migration of the White Wagtail (*Motacilla alba*) across Bartragh Island in Killala Bay. Mr. Warren first met with this bird so long ago as 1851, after which he lost sight of it till 1893, while since 1897 it seems to have been noticed every year in April or May, passing northwards across this little island to breed in northern Scandinavia or Iceland.

In another article (p. 152) Mr. Warren relates his observations on the southward migration of Richardson's and the Pomatorhine Skuas at the end of September or beginning of October up the Moy estuary at the head of Killala Bay. He believes that they pass on along the line of lakes Cullen, Mask, and Corrib to Galway Bay, and thence to Tralee harbour, where they have been noticed a few days later than at Killala.

Mr. P. D. Percival (p. 208) has ringed a number of young

Woodcock in co. Sligo, and finds that most of them are shot in the immediate neighbourhood of the place where they were bred and ringed. He comes to the conclusion that in the west of Ireland the Woodcock is a more or less sedentary and resident bird.

Among rarities recorded, Mr. Barrington (p. 20) obtained *Alauda arvensis cinerea* in Oct. 1910 at the lighthouse on the Old Head of Kinsale, co. Cork—the first record for Ireland ; he also had forwarded to him from Teelin, co. Donegal, on March 25 an immature female specimen of the Ivory Gull (*Pagophila eburnea*), and a Lesser Whitethroat (*Sylvia canna*) from Rockabill light, co. Dublin, killed at the light on May 13. This is a very rare bird in Ireland ; indeed, there are only two previous records. Mr. Nichols notes the receipt of a Squacco Heron (*Ardea ralloides*), obtained in June 1913 near Westport, co. Mayo, by the National Museum, Dublin.

From Mr. R. J. Ussher (p. 164) we have a note on the further extension of the breeding-range of the Fulmar—this time as far as Kerry, while in the December number there is a lengthy obituary notice of him by his old friend Mr. R. M. Barrington, accompanied by a portrait.

Jaarbericht Nederlandsche Vogelkundigen.

[Club van Nederlandsche Vogelkundigen. Jaarbericht, no. 3. Deventer (Kluwer), 1913.]

The President and prime mover in this Dutch ornithological club is Baron Snouckaert van Schauburg of Dorn, and most of the articles contained in the year-book are from his pen. He commences with a report on ornithological occurrences in Holland from May 1912 to September 1913. The most remarkable find of the year is undoubtedly of the occurrence of *Cinclus a. aquaticus* in the extreme south-east of Holland in the province of Limburg. It is a resident there and has been found breeding. A photograph of the nest and specimens obtained is given. The same author writes some notes on a collection of birds he has recently received from Naryn in the Tian-Shan of

Central Asia, and of his experiences and observations on birds along the shores of Lake Geneva.

Another contributor, H. C. Siebbers (p. 67), has endeavoured to find out which of the races of the Green and Great Spotted Woodpeckers inhabit Holland. An examination of a series of 28 Green Woodpeckers leads him to the conclusion that *Picus viridis pinetorum* is the prevailing form, but that in the north and west provinces the birds showed variations towards *P. v. pluvius,* the British race. In the case of the Spotted Woodpecker, *Dryobates major pinetorum* was everywhere the breeding bird, but *D. m. major* occasionally occurred on migration.

From the pen of the same author is a paper on the birds of Anhalt and its neighbourhood in Westphalia.

Messager Ornithologique.

[Messager Ornithologique. Edited by G. I. Poliakov. Obiralovka, Moscow Govt. 4th year, 1913.]

This Russian journal has now reached its fourth year of publication. As the matter is all in Russian except that the table of contents is translated, it is impossible here to do more than to indicate some of the principal papers contained in the three numbers that have reached us.

Of faunistic lists dealing with districts in Russia proper, we find E. I. Katin on birds in the Kjelze Government and E. W. Scharleman on Caucasian birds, while W. E. Uschakow has prepared a list of the birds of Tarsk in the Tobolsk Govt. N. A. Sarudny and S. I. Bilkewitch write on the Transcaspian region and north Persia and also on the ornithology of Turkestan, and the editor continues his account of his journey to Saissan-nor and Marka-kul in western Siberia.

The following new forms are described :—

Acrocephalus streperus intermedius Stantschinski (p. 34).
Corvus macrorhynchus mandshuricus Buturlin (p. 40).
Passer montanus volgensis Ognew (p. 41).
Remiza pendulina bostanjogli Sarudny (p. 46).
Carpodacus rhodochlamys kotschubeii Sarudny (p. 165).
Phylloscopus collybita subsindianus Sarudny (p. 269).

Other articles deal with the moult of the Kestrel by W. A. Hachlow, the biology of the Water-Ouzel by S. G. Stecher, the distribution of Marsh-Tits in Russia and the Nutcrackers of the Kief Government.

Ornithologisches Jahrbuch.

[Ornithologisches Jahrbuch. Organ für das palæarktische Faunagebiet. Herausgegeben von Victor Ritter von Tschusi zu Schmidhoffen. xxiv. Jahrgang, 1913. 240 pp. Hallein.]

The three parts of Ritter von Tschusi's organ are chiefly taken up with faunistic reviews and field-notes on the birds of the European continent. A. Watzinger (pp. 1–27) writes at some length, and as the result of many years' observation, on the birds of the country round Gmünden and Lambach, a mountainous region of Upper Austria, where he found *Acanthis linaria rubescens* breeding among the larches and pines at elevations of 4500 to 5500 ft. Rudolph J. Fromholz (pp. 27–45, 91–108) writes in diary form on his observations on the birds of the shores and islands of the delta of the Oder in Pomerania, and Dr. J. Gengler (pp. 46–60) has field-notes made on a short visit in summer to the neighbourhood of Mt. Arber in the highlands of Bavaria on the frontier between that kingdom and Bohemia.

Another interesting locality was visited by Dr. E. Rössler of Zagreb (pp. 173–189). This is the lower course of the river Drave, the great tributary of the Danube, which joins that river at Belgrade. Along its course are some large swamps and marshes, especially the "Obedska bare," where thousands of marsh-loving birds were found breeding. Among these the most numerous were the Glossy Ibis, the Spoonbill, and several species of Herons and Egrets.

P. E. Schmitz (pp. 85–91) continues his ornithological diary for 1911 at Jerusalem, and Herr von Thanner (pp. 189–194) records his rather unhappy experiences in the Canaries. He arranged to visit the eastern Canary Islands, but was unfortunately taken ill on Allegranza, and was unable to carry out all his plans. He was not able, as he had hoped, to secure examples of the Black Oyster-catcher recently described by Bannerman, whom he met in Fuerteventura, but he made some other observations which he here recounts.

One of the most valuable papers is that of Dr. A. Laubmann (pp. 108–153, 161–173), who has critically examined further large collections of birds from Corsica in the Munich and in his own Museum, and here discusses at length the validity or otherwise of the many subspecies created for the Corsican and Sardinian breeding birds. In most of the cases examined by him he upholds the distinctions made by Parrot, Kleinschmidt, and other authors, and concludes that in a general way the Corsican subspecies are distinguished from their continental allies by their more intensive and darker coloration and by their slightly smaller size. He upholds the distinctness of *Corvus corax sardus* Kleinschm. against the attacks of Balducci (see 'Ibis,' 1913, p. 138).

A shorter article by W. Bacmeister (pp. 55–60) discusses the occurrence of the Rock-Sparrow (*Petronia p. petronia*) in Württemberg. It has been stated, and no doubt with truth, that it nested in the early part of the last century among the ruins of the castle of Neuhaus, near Mergentheim, but it certainly does not do so at the present time.

Die Schwalbe.

[Die Schwalbe, Berichte des Komitees für Ornithologische Beobachtungs-Stationen in Österreichs. Redigiert von Dr. Ludwig Ritter Lorenz von Liburnau. Neue Folge, iii. 1902–1913.]

The editor of this journal explains in the commencement of the present number the long interval that has elapsed since the appearance of the previous one, which is due partly to the mass of material accumulated and partly to difficulties of meeting the cost of publication.

The present number opens with a discussion of the question as to whether the Water-Ouzel destroys fish spawn and fry as it has often been accused of doing. As a result of careful enquiries and investigations throughout various parts of Austria, the conclusion is reached that though occasionally fish scales are found in the stomachs of Water-Ouzels, the bulk of their food consists of aquatic insects.

The food of the Jay in Bohemia forms another subject of investigation undertaken by Curt Loos. He finds from the examination of 135 stomachs that the bulk of the food is of vegetable origin, and consists chiefly of acorns, the animal matter chiefly of coleopterous insects.

The greater part of this number (pp. 35–134) is taken up with the statistics of the spring migrations of various birds during the years 1897 to 1903. Very copious details and an elaborate series of dates are given, which we have not here space to discuss, but they should be examined by every serious student of migration.

The Scottish Naturalist.

[The Scottish Naturalist. Nos. 13–24 forming the volume for 1913. Edinburgh (Oliver & Boyd).]

Most of the ornithological articles in last year's volume of the 'Scottish Naturalist' are by the editor, Mr. Eagle-Clarke. On pp. 5 and 25, in collaboration with the Duchess of Bedford, he reports on migration observations on Fair Isle during 1912, made partly by himself and partly by Mr. Wilson, the bird-watcher, and Mr. George Stout.

From this little island, not inaptly called the British Heligoland, which is only three miles by two and lies midway between Orkney and Shetland, records of 411 species have now been obtained: only 18 of these are residents. The two rarities of 1912 are the Black Chat (*Saxicola leucura*), new to the Scotch avifauna and only once previously obtained in the British Islands, and the Curlew Sandpiper, probably not so uncommon, but not hitherto detected.

In a subsequent note Mr. Clarke states that a Wagtail that he obtained in May 1910 on Fair Isle turns out on further examination to be an example of *Motacilla flava beema*, an Asiatic species which had been once previously recorded in the British Isles from Sussex.

This last autumn Mr. Clarke deserted Fair Isle for Auskerry, a small uninhabited island of 260 acres, and one of the most easterly of the Orkney group. Here on October 3 last, among a number of southward migrants, he secured an example of *Phylloscopus fuscatus,* another Asiatic straggler breeding in eastern Siberia and wintering in India.

Mr. Eagle-Clarke also describes as a new subspecies in this volume (p. 53) the form of the Song-Thrush inhabiting the Outer Hebrides under the name *Turdus musicus hebridensis.* It is quite easy to distinguish it from the Song-Thrush of our islands, and owing to the absence of trees it breeds among the rocks.

Miss Baxter and Miss Rintoul, whom we may perhaps describe as pupils of Mr. Clarke, are also addicted to visiting small islands to observe migration. They spent the months of May and September 1912, as well as September 1913, on the Isle of May, at the mouth of the Firth of Forth, making observations on migration and looking out for rare stragglers. They were fortunate enough to discover *Hypolais polyglotta* and *Saxicola indica,* both of which have never been met with in Scotland before.

A systematic and full report is given by Mr. A. L. Thomson on his Aberdeen bird-marking scheme. The most interesting case we have noticed is of a British Song-Thrush which was ringed near Aberdeen in June, and was killed near Lisbon in November. We hardly yet know of any definite records of our British race outside our islands.

Mr. Peter Anderson contributes an interesting list of the birds of Tiree, an island lying off the coast to the west of Mull. It is remarkable how many birds are noted as winter-visitors only ; the Song-Thrush, Blackbird, Stone Chat, Redbreast, Wren, and Goldfinch are all included in that category, and we may conclude that the winters there are comparatively mild although it lies so far north.

List of other Ornithological Publications received.

Howard, H. E. British Warblers. (Pt. 8. London, 1913.)
Mathews, G. M. The Birds of Australia. (Vol. iii. Pts. 4, 5, 1914.)
Salvadori, T., & Festa, E. Nuova specie di Frosone della Sardegna. (Boll. Mus. Zool. Anat. Torino, xxix. No. 681, 1914.)
Schalow, H. Über *Calamoherpe brehmii* Müller. Über das Brut-Vorkommen von *Nucifraga caryocatactes caryocatactes* L. in Thüringen. (Journ. f. Orn. January 1914.)
Aquila. (Tom. xx. Budapest, 1913.)
The Auk. (Vol. xxxix. No. 1, 1914.)
The Austral Avian Record. (Vol. ii. No. 4. London, 1914.)
Avicultural Magazine. (3rd Series, Vol. v. Nos. 3–5, 1914.)
Bird Lore. (Vol. xv. No. 6; Vol. xvi. No. 1, 1913.)
British Birds. (Vol. vii. Nos. 8–10, 1914.)
The Condor. (Vol. xvi. No. 1, 1914.)
The Emu. (Vol. xiii. pt. 3, 1914.)
Journ. f. Ornith. (Vol. lxii. Heft 1, 1914.)
Victoria Memorial Museum, Bulletin. (No. 1. Ottawa, 1913.)
Zoologischer Anzeiger. (Bd. xliii. Nos. 7–13, 1914.)

XIX.—*Letters, Extracts, and Notes.*

The following letters have been received:—

Sir,—In the April number of 'The Ibis' of last year, you were kind enough to publish a few lines from me expressing the belief that two eggs from the Tristram Collection, taken on Grand Manan many years ago and thought to be those of *Passerculus princeps*, "must have been laid by *P. savanna*." Their recent describer, in a note immediately following mine on the same page, dissents from this opinion, maintaining that inasmuch as they "were labelled and presumably identified by Mr. T. M. Brewer, the well-known American ornithologist, and as Mr. Ridgway, in his recent work on the 'Birds of North and Middle America,' states that *Passerculus princeps* breeds on Sable Island and other islands off Nova Scotia, there seems to be no sufficient reason to alter or doubt the identification."

Unfortunately for this contention it is, in reality, unsupported by Mr. Ridgway's statement, which stands as follows:—"Breeding on Sable Island (and other islands?) off Nova

Scotia." By enclosing the words "and other islands" in parentheses and following them with a question mark, Mr. Ridgway has made it perfectly clear that what he intended to signify was merely that there *may* be—not certainly *are*—breeding stations other than the only known one, a possibility which cannot be denied and hence should not be wholly ignored, despite ever accumulating negative evidence that tends ever more and more strongly to discredit it. Such uncertainty has practically ceased to exist, however, as regards Grand Manan, for the avifauna of that island—which, by the way, lies not "off Nova Scotia" in the usual sense of the term, but on the opposite side of the Bay of Fundy, within sight of the coast of Maine—has been very carefully investigated within recent years by several excellent field ornithologists, who report that the Savanna Sparrow is apparently the only species of *Passerculus* which occurs there in summer.

I am, Sir,
Yours &c.,
WILLIAM BREWSTER.

Cambridge, Massachusetts,
5 December, 1913.

SIR,—I desire to direct the attention of ornithologists to a memoir upon the peroneal muscles of birds published in the December part of the 'Proceedings of the Zoological Society.' The author, Dr. P. Chalmers Mitchell, describes those muscles in a large number of birds belonging to all of the chief groups, and deduces therefrom a table in which the main variations of the muscles are illustrated in a graphic form.

While it may be useful to possess within the compass of a few pages the principal variations of these, after all, rather well-known muscles, it is entirely opposed to the methods adopted universally by zoologists to ignore to so large an extent, as has Dr. Mitchell, the work of previous observers.

Dr. Mitchell rightly allows to Dr. Gadow the credit of having contributed the most considerable account extant of these muscles; but this bare statement would not lead the reader to realise how large in reality is Dr. Gadow's contribution to the matter. For in a long account occupying 28 pages, Dr. Mitchell only refers to Dr. Gadow as having dealt with *Aptenodytes*, *Serpentarius*, *Pandion*, Parrots, and *Pelargopsis*. Whereas that gentleman has described the peroneals also in Owls, *Cypselus*, *Bucorvus*, *Momotus*, *Eurystomus*, *Podargus*, *Corythaix*, *Caprimulgus*, *Cuculus*, Pici, Tubinares, *Podiceps*, Lamellirostres, *Otis*, *Grus*, *Ciconia*, *Ardea*, *Phœnicopterus*, *Pterocles*, *Uria*, *Larus*, *Alca*, *Pelecanus*, *Talegalla*, *Euplocamus*, *Crax*, Columbæ, etc. Nor does Dr. Mitchell refer to myself except to point out that I am mistaken in my account of these muscles in Penguins and Alcedinidæ. But in my 'Structure and Classification of Birds' I have referred to the peroneals in the Capitonidæ, Momotidæ, Caprimulgidæ, Musophagi, Striges, Psittaci, Accipitres, and in some other forms, in all of which statements I find that Dr. Mitchell agrees with me. Furthermore, in no fewer than twelve papers published either in the 'Proceedings of the Zoological Society' or in 'The Ibis,' I have incidentally described the peroneal muscles in *Carpococcyx*, *Anastomus*, *Plotus*, *Heliornis*, *Podica*, *Rhynchops*, *Æchmophorus*, various Caprimulgidæ, *Scopus*, and *Rhinochetus*.

Yours faithfully,
Frank E. Beddard.

Zoological Gardens,
Regent's Park,
5 Jan., 1914.

Sir,—On the first page of the memoir to which Dr. Beddard refers I wrote as follows:—"On looking up the literature relating to the peroneal muscles in birds, I found that even Dr. Gadow's careful description of these muscles (Bronn's Thier-Reich, Aves, pp. 180–182) was based on a relatively small number of individuals and types, and that his work, together with the insignificant contributions of earlier and later writers, supplied only a vague and dubious picture of the anatomical facts." Dr. Beddard's "Structure and Classification of Birds" was published six or seven years later, but the references to the peroneals therein contained are so much less adequate that it was unnecessary to mention them. My object was to try to understand the relations of the various modifications of the muscles and their distribution in the whole group. For this purpose I found little in Gadow and nothing in Beddard to assist me, and I dissected the muscles in some 400 birds. If, however, the whole of the facts had already been adequately recorded, I should have been saved much time, but should still have had the paper to write. Descriptive anatomy is only the raw material of the contribution to ornithology of which the memoir in question is an instalment.

Yours very truly,
P. Chalmers Mitchell.

Zoological Society of London,
2 Feb., 1914.

Sir,—The allusion made by Mr. W. P. Pycraft to the injudicious action taken by certain Fishery Boards ('Ibis,' 1914, p. 142), who imagine that they are doing service by advocating the slaughter of Cormorants and Gannets, gives rise to a good deal of reflection. If the toll of fish which these birds take is so serious, why are there still so many fish in the sea? This seems a fair argument for the non-advocates of slaughter, especially as the European Gannet (*Sula bassana*) is believed to be on the increase.

Will you permit me to communicate the following returns —which indeed would seem almost incredible were they not made on the best authority—of the celebrated Herring-fishery at Great Yarmouth in this county, for 1913. They are taken from the official figures, which the Harbour-master is required to issue annually at each of the great ports. The Herring season in the North Sea lasts approximately from September to December, and last year (1913) it ended, as far as Yarmouth trawlers were concerned, on December 20th. In these three months *eight hundred and* *twenty-four million, two hundred and thirteen thousand* (824,213,000) herrings were brought into the port of Great Yarmouth, and nearly five hundred and thirty-seven millions into the adjoining harbour of Lowestoft. This takes no account of the seventy-five millions which were brought into Grimsby Docks, or of the multitudes carried into Lerwick, Stornoway, and various other places where the fishery is carried on. Having regard to such figures as these, who can question there being enough fish in the sea for man and the birds too?

The fecundity which the herring, mackerel, whiting, sprat, etc., display, is something altogether astounding; in fact, the process of thinning out their numbers which Gannets and other sea-birds perform, should, as Mr. Pycraft has well remarked, be regarded as beneficent rather than otherwise.

Near the shore, and at or in the vicinity of river-mouths, or near their breeding-places, it is conceivable that Gannets and other sea-birds may be inimical to the interests of the fishermen. That much may be admitted, but so long as such vast numbers of fish continue to be netted in British Seas, it is impossible to argue that Gannets, Cormorants, Shags, Guillemots, and Puffins affect the fish supply, except locally, and accordingly it is a wrong policy altogether to destroy them.

If Gannets do harm, why is it that the trawling grounds on the west Hebridean coast, all of them within easy flight of St. Kilda, are among the best that are known to Scotch fishermen? St. Kilda and adjacent islands are the largest metropolis of Gannets and Puffins in the world, but it is evident that the fecundity of herrings, mackerel, haddock, coal-fish, etc. is more than equal to the consumption by these birds, helped as they are by Guillemots, Razorbills, Shags, and Gulls, which breed there in tens of thousands, as many visitors to Borrera, Stack Armine, and Stack Lii testify.

J. H. GURNEY.

Keswick Hall, Norfolk,
23 January, 1914.

Sir,—In the 'Revue Français d'Ornithologie' for April 1913, the Comte de Tristan records his finding an egg of the Great Auk in a cupboard which probably had not been opened for 80 years. Upon my attention being called to this communication by Mr. H. F. Witherby, I wrote to the Comte asking his permission to photograph the egg and this was at once most kindly given. Early in August, accompanied by Mr. Henry Stevens, I visited the Comte at the Chateau L'Emérillon and obtained negatives of the egg. Its history, so far as I have been able to gather, is as follows:—

It belonged to the Marquis de Tristan, the grandfather of the present Marquis and great grandfather of the Comte. When Comte de Tristan he travelled a great deal and brought home many interesting specimens, notably this egg. He formed the collections of minerals, fossils, shells, mosses, etc., now in the Museum at Orleans. His herbarium and many manuscripts are still at L'Emérillon, and with many mementoes of his travels remained, since his death in January 1861, in a cupboard until 1910, at which time the Comte, who is much interested in birds and eggs, discovered them. The egg measures 138 × 76 millimetres; it has a pale yellow ground-colour, and the larger end is well covered with black markings. On one side is written in faded ink the word "Pingouin." When discovered the egg was found to be badly fractured about 1½ inches from the smaller end.

This brings the number of recorded eggs to 74. There has been an interval of 14 years since I last communicated a like discovery to 'The Ibis.'

I am, Sir,
Yours &c.,
Edward Bidwell.

1 Trig Lane, E.C.,
12 Jan., 1914.

The Annual General Meeting of the British Ornithologists' Union, 1914.—The Annual Meeting of the British Ornithologists' Union for 1914 was held on March the 17th at Pagani's Restaurant, Great Portland Street, W., as the date selected clashed with meetings held by the Zoological Society and consequently their rooms were not available. The Chair was taken by the President, Col. R. G. Wardlaw-Ramsay, and there were about seventy Members present.

The Minutes of the last Annual General Meeting were read and confirmed.

The Secretary then read the following Report of the Committee for the past year:—

"The Committee regret that they have to report a decrease in the funds of the Union during the past year, although the membership has increased from 425 to 433. The accounts, which have been audited in detail by Mr. D. Seth-Smith, show that the total receipts in 1913 were £608 6*s.* 7*d.* as compared with £663 19*s.* 10*d.* in the previous year; and the total payments amounted to £634 9*s.* 8*d.* as against £630 4*s.* 5*d.* in 1912. The balance carried forward to 1914 was £112 19*s.* 4*d.*

"The Annual Volume of 'The Ibis' for 1913, published in due course, is the fifty-fifth volume, and the first of the Tenth Series, under the editorship of Mr. W. L. Sclater. It contains 745 pages, and is illustrated with six coloured and four photographic plates, three maps, and two text-figures.

"With regret the Committee report the deaths of the following Members since the last Annual General Meeting:—Major G. E. H. Barrett-Hamilton, Capt. J. A. Doig, Dr. J. W. B. Gunning, Mr. F. V. McConnell, Dr. P. L. Sclater, Mr. H. P. Senhouse, Mr. R. J. Ussher, and Dr. A. R. Wallace.

"The following gentlemen have resigned :—Earl Darnley, Lord Walsingham, and Mr. Jeffery Whitehead.

"The names of Messrs. Harry Becher, Norman Gilroy, G. M. Hedges, and Stuart Maples, have been removed from the List of Members under Rule 6.

"The membership of the Union, and comparison with the previous five years is as follows :—

		1914.	1913.	1912.	1911.	1910.	1909.
Ordinary	Members...	433	425	420	419	424	422
Extraordinary	,,	1	2	3	3	3	2
Honorary	,,	7	8	9	9	9	10
Hon. Lady	,,	6	5	6	4	...	...
Colonial	,,	9	9	9	10	9	8
Foreign	,,	19	19	20	19	20	19

"There are 23 Candidates for Ordinary Membership, 2 for Honorary, 1 for Colonial, and 3 for Foreign Membership.

"After due consideration the Committee decided to transfer the agency for the sale of the B. O. U. publications from Mr. R. H. Porter to Messrs. William Wesley & Son, and to place the distribution to Members in the hands of the printers, Messrs. Taylor & Francis. These arrangements will somewhat reduce the cost of distribution, and the Committee also hope that the new conditions will improve the sales of the Union's publications.

"The Committee have decided that instead of having varying reductions on the different publications issued by the Union, in future all such publications shall be available for purchase by Members at the uniform reduction of 25°/₀ off the published prices. The stock is being thoroughly overhauled, and a list of the publications now in stock will be published in the circular issued with each part of the 'The Ibis' as soon as possible.

"The new edition of the B. O. U. List of British Birds is now in the press, and the Committee hope that it will be possible to issue it during the course of the present year.

"The compilation of the new General Index to 'The Ibis' for the years 1895 to 1912 was commenced early in December last and is progressing steadily."

The statement of accounts for the year 1913, previously circulated to the members, was submitted and approved, and a vote of thanks was accorded to the Auditor, Mr. D. Seth-Smith.

The Meeting then proceeded to elect the Officers for the ensuing year, and it was announced that Mr. E. C. Stuart Baker had been re-elected Hon. Secretary and Treasurer, and that Mr. W. R. Ogilvie-Grant had been elected a member of the Committee in the place of Dr. N. F. Ticehurst, who retired by rotation.

The following twenty-one gentlemen were duly elected Ordinary Members of the Union:—Thomas P. Aldworth; Colonel Robert Betham; Robert O. Blyth, M.A.; Colonel Kenneth Buchanan, I.A.; The Rev. F. Courtois, S.J.; Cecil M. Dyer; Laurence A. Curtis Edwards, M.A.; Robert Etheridge, Junr., C.M.Z.S.; John N. Kennedy; Major John Lindsay-Smith, I.A.; Willoughby P. Lowe; John C. Moulton; Charles R. S. Pitman; James Wall-Row; Dr. Hans Sauer, F.Z.S.; John Stewart; Erwin Stresemann; Lewis R. Sutherland, M.B., C.M.; The Marquis of Tavistock, F.Z.S.; Chaplin C. Treatt; Percy F. Wickham.

It was also resolved that Dr. Valentine Bianchi and Prof. Herman Schalow, at present Foreign Members of the Union, should be transferred to the list of Honorary Members.

Dr. John Albert Leach, M.A., was elected a Colonial Member, and the following three gentlemen were elected Foreign Members:—Herr Carl E. Hellmayr, M.B.O.U.; Dr. Witmer Stone; Prof. Dr. A. J. Einar Lönnberg, F.M.Z.S.

The following alteration to Rule 7, proposed by Mr. C. D. Borrer, and seconded by Mr. C. G. Talbot-Ponsonby, was agreed to:—

That the following portion of Rule 7, which now stands as follows :—

> ‘the Secretary shall be directed to send a registered letter to that Member, stating the facts brought before the Committee and asking for an explanation of the same, but without mentioning the source from which such information was obtained.’

Shall be altered to read thus :—

> ‘the Secretary shall be directed to send a registered letter to that Member, stating the nature of the offence of which he is accused, together with the name of the informant, or the source of information, and asking for an explanation of the same.’

The resolution of sympathy and support in favour of the ‘Plumage Bill’ now before the House of Commons was discussed at length, and the following motion was carried unanimously :—

> “That the British Ornithologists’ Union express their hearty sympathy with the principles of the Government Bill for prohibiting the importation of the skins and plumage of Wild Birds for millinery purposes, but beg that their elected representatives may be heard in Committee with regard to the details.”

In accordance with this resolution, it was agreed that the Committee of the Union should act as the representatives of the B. O. U. for this purpose.

Mr. W. L. Sclater’s motion “That ladies be admitted to Ordinary Membership of the British Ornithologists’ Union” was next discussed, but on being put to the Meeting was declared not carried.

A vote of thanks to the Zoological Society for the use of their Offices and Rooms during the past year was unanimously passed.

The meeting then adjourned to attend the Annual Dinner, which was held in conjunction with the monthly Dinner of the British Ornithologists’ Club.

The Plumage Bill.—On March the 9th last the second reading of the Plumage Bill was passed by the House of Commons by a majority of 297 to 15.

This bill, the object of which is to prohibit the importation, for trade purposes, of the plumage of all foreign birds (except Ostriches and Eider Ducks), was first drafted by the Royal Society for the Protection of Birds with the support of representatives of the Natural History Museum and of the Royal and other Societies in 1908. It was introduced into the House of Lords by Lord Avebury and passed that House on July the 21st, 1908, with strengthening amendments. It was introduced into the House of Commons by Lord Robert Cecil, but the end of the session prevented a second reading being taken.

What is essentially the same bill was introduced at the end of last session (Aug. 4, 1913) by Mr. Hobhouse on the part of the Government and was backed by Mr. E. S. Montagu and Mr. Sydney Buxton, and it is this bill which was read a second time on March the 9th last.

The following are the principal clauses of the bill as it now stands:—

1.—(1) Subject to the exceptions in this Act contained, a person shall not import into the United Kingdom the plumage of any wild bird, and accordingly section forty-two of the Customs Consolidation Act, 1876, shall be read as if there were included in the table of prohibitions and restrictions therein—

"The plumage of wild birds as defined by the Importation of Plumage (Prohibition) Act, 1914, subject to the exceptions contained in that Act."

(2) A person shall not have in his possession or be concerned in selling the plumage of any wild bird which has been imported in contravention of this Act, or which, having been allowed to be imported on the ground that it is being put to a certain use or intended to be put to a certain use, is being put to some other use; and if any person has in his possession or is concerned in selling any such plumage, he shall be liable on conviction under the Summary Jurisdiction Acts to a fine not exceeding five pounds in respect of the first offence and twenty-five pounds in respect of the second or any subsequent offence, and the court before whom he is convicted may order the forfeiture or destruction of any plumage in respect of which the offence has been committed.

2.—(1) The following plumage is excepted from the prohibition on importation under this Act:—

(*a*) The plumage of birds for the time being included in the Schedule to this Act [*i. e.* Ostriches, Eider Ducks]:

(*b*) The plumage of birds imported alive:

(*c*) The plumage of birds imported under a licence granted under this Act for the purpose of supplying specimens for any natural history or other museum, or for the purpose of scientific research:

(*d*) The plumage of wild birds ordinarily used as articles of diet and imported for that purpose.

(2) His Majesty may by Order in Council from time to time add the name of any bird to the Schedule to this Act or remove the name of any bird from that Schedule.

(3) The Board of Trade shall grant a licence under such conditions and regulations as they think fit to any person to import specimens of birds for any natural history or other museum, or for the purpose of scientific research.

(4) Any importer claiming an exemption under this section for any plumage on the ground that it is to be put to a certain use shall deliver to an officer of the Customs and Excise, if required by any such officer, on importation a written declaration of the purpose for which it is imported.

3. Where the court is satisfied in any proceedings under this Act, that any plumage is the plumage of a bird which is never or rarely found alive in a wild state in the United Kingdom, the plumage shall be deemed to be imported in contravention of this Act unless the contrary is proved.

4. In this Act—

The expression "plumage" includes the skin or body of a bird with the plumage on it;

The expression "sell" includes exchange and let out on hire;

Tht expression "importer" has the same meaning as in the Customs Consolidation Act, 1876.

5. This Act may be cited as the Importation of Plumage (Prohibition) Act, 1914, and shall come into operation on the first day of January nineteen hundred and fifteen.

THE IBIS.

TENTH SERIES.

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XX.—*Observations on the Bird-Life of the Anatolian Plateau during the Summer of* 1907. By L. N. G. RAMSAY, M.A., B.Sc.

(Text-figure 6.)

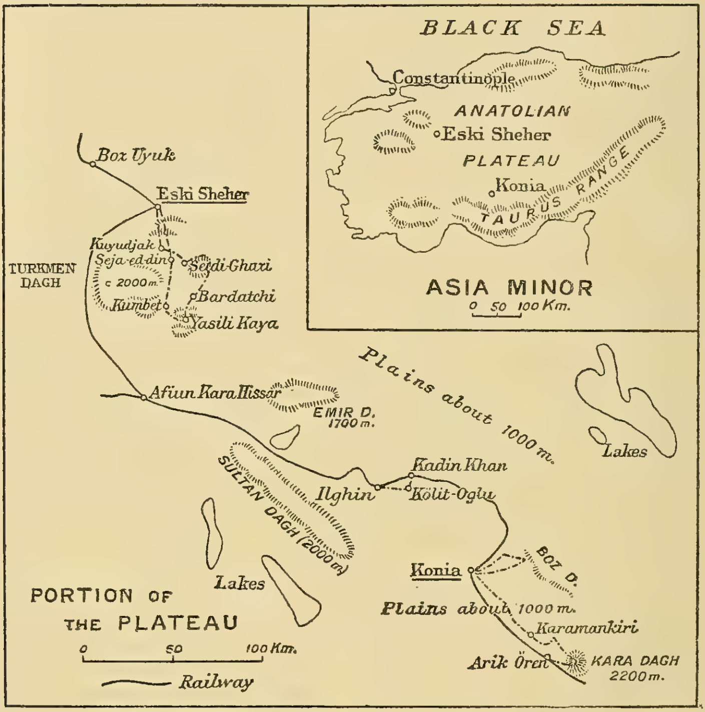
DURING the summer of 1907, it was my good fortune to spend several weeks in the interior of Asia Minor. My attentions were devoted almost entirely to the natural history of the country, a considerable part of my time being spent in the formation of a collection of the smaller Mammalia. It was, however, the bird-life which interested me most, and in this paper are embodied my ornithological observations. Made in a region comparatively little subject to the visits of naturalists, it is hoped that these notes may be of interest to ornithologists. It will be well to begin by giving some account of the districts visited, as typical of the interior of Asia Minor.

A glance at the map (text-fig. 6) will be sufficient to indicate the whereabouts of the places to be mentioned. We left Scutari on the Asiatic side of the Dardanelles on May 18, and arrived the same evening at Eski-Sheher, after fourteen hours in the train. The line at first skirts the Gulf of Ismid, then continues eastward to the river Sakaria, whose valley and that of its tributary the Kara Su it follows through very mountainous country, finally emerging into the great plateau near Boz Uyuk.

On the plateau we remained until the 8th of July, and during the intervening period our itinerary was as follows :—

On May 20 another long day in the train brought us to Konia, which city we left on the 23rd to trek to the Kara Dagh, after making a one-day waggon-trip across the plain to the Bos Dagh, a range of hills lying to the north-east.

Text-fig. 6.


BLACK SEA
Constantinople
ANATOLIAN
Eski Sheher
PLATEAU
Konia
TAURUS RANGE
ASIA MINOR
0 50 100 Km.
Box Uyuk
Eski Sheher
Kuyudjak
Seja-ed-din
Seidi-Ghazi
TURKMEN DAGH
c 2000 m.
Bardatchi
Kumbet
Yasili Kaya
Afiun Kara Hissar
EMIR D. 1700 m.
Plains about 1000 m.
Lakes
Kadin Khan
SULTAN DAGH (2000 m)
Ilghin
Kölit-Oglu
BOZ D.
Konia
Lakes
Plains about 1000 m.
Karamankiri
Arik Ören
KARA DAGH 2200 m.
PORTION OF THE PLATEAU
0 50 100 Km.
Railway

Sketch-map of the localities visited by Mr. Ramsay.

In the Kara Dagh we remained in camp for over a month, returning to Konia on June 27.

After this, two short trips by *araba* were made before we returned to Constantinople: the first from Kadin-Khan to Ilghin, *viâ* Kölit-Oglu (July 1–2), the second a tour into the hilly country south of Eski-Sheher, during which we covered about 160 km., and passed the villages of Kuyudjak, Seidi-Ghazi, Bardatchi, Yazili-Kaya, Kumbet, and the Sedja-ed-Din Teké (July 4–8).

THE ANATOLIAN PLATEAU.

Along the south-eastern margin of Asia Minor rises the lofty arc of the snow-capped Taurus Range. To the north of this the country is a great tableland, stretching away towards Transcaucasia to the east, and descending through mountainous country to the sea on the north and west.

This tableland, the Anatolian Plateau, consists for the most part of wide undulating plains of Mesozoic sediments, of an average elevation of some 3000 feet, from which rise various minor mountain-ranges and groups of hills of volcanic origin, like islands from a sea. In some districts, as in the south-west, ancient metamorphic rocks rise to the surface to form regions of low hills.

The climate in summer is very dry, and the country is therefore arid and for the most part devoid of trees. A number of large sheets of water without outlets lie on the plateau, and besides these several large river-systems (Kizil Irmak, Sakaria, etc.) drain to the north or west.

The winters are severe, with much frost and snow.

With a proper water-supply, such as will be secured to some parts when the irrigation-schemes at present being carried out are completed, the plains would form a very rich and fertile agricultural country, but just now they are for the most part very arid and very thinly populated. Near the towns and villages wheat of fine quality and other crops are grown, but the greater part of the country is open prairie-land covered with a short turf, or sparsely clothed with herbaceous plants, which grow in tufts so as to form widely *open* associations.

The streams are few and sluggish, ending, it may be, in marshes or shallow lakes without outlets. In some of the more marshy areas which the railway passes through between Eski-Sheher and Konia, there were scanty woods of small deciduous trees, but elsewhere the plains were practically treeless, except for the lofty Lombardy poplars and groves of other trees in and around the towns.

The most characteristic birds of the open plains are Larks of a number of species, which are very numerous. The Isabelline Wheatear (*Saxicola isabellina*) is an equally characteristic and widely dispersed species, while Sand-Grouse (*Pterocles arenarius*), Lapwings (*Vanellus vulgaris*), Rollers (*Coracias garrulus*), and various others are found locally. The Lesser Kestrel (*Falco cenchris*) is very common and widely distributed. In and about the towns Swifts (*Cypselus apus*), Kites (*Milvus ictinus*), Storks (*Ciconia alba*), Swallows (*Hirundo rustica*), and Starlings (*Sturnus unicolor*) are common, while Vultures are often to be seen soaring aloft or gorging themselves on some carcase in the plain.

At Eski-Sheher a small river, the Hodja-Su, flows past the outskirts of the town, and here was one of the most interesting assemblages of bird-life. The sluggish river had cut for itself in the alluvial loam, steep banks, often nearly perpendicular for a height of from four to six feet above the water, and in these many Sand-Martins (*Cotile riparia*) had dug their nest-holes. Near by was cultivated ground (market-gardens) with rows of large trees and bushes, in which a good many Magpies (*Pica rustica*) and several pairs of Kites (*Milvus ictinus*) had their nests. On one of the largest trees a colony of about twenty pairs of Herons (*Ardea cinerea*) had established themselves, and the ground below was strewn with their egg-shells. There were also many Lesser Kestrels, especially around one very large tree further along the river.

In the vertical banks of the stream, there were other holes besides those of the Martins, and, on one of these being dug out, a green crab measuring about two and a half inches across the carapace, was found. This, Mr. L. A. Borradaile informs me, was probably one of the freshwater forms of the genera *Potamon* or *Telphusa*.

THE KARA DAGH.

Having given some account of the plains, I will now add some general notes on the Kara Dagh, as an example of the smaller mountain-ranges of the plateau. It should be remembered that in Asia Minor there are many Kara Daghs —the name signifies simply " black mountain." That particular Kara Dagh in which about five weeks of our time were spent lies about fifty miles south-east of Konia, and it was here that most of my collecting and observing was done.

This Kara Dagh, then, is a volcanic mountain-pile rising like an island from the surrounding plains, which are hereabouts at an elevation of some 3300 feet. It is made up of a central mass several miles in diameter surrounded by a number of outlying hills of more or less conical shape. The central mass consists of the rim of a great cup-shaped hollow or crater, in outline a short oval, of which the major axis, some two miles long, runs from south-west to north-east. The bottom of the crater is a grassy basin, at whose lowest point, near the north-east end, lies a small muddy pond, the altitude of which is about 5000 feet. On the south-east side the rim of the crater is formed by a lofty ridge culminating at its more northerly end in Mahalitch Dagh, the highest point of the whole group, 7200 feet above sea-level. Other lofty peaks help to encircle the hollow, but on the side opposite Mahalitch Dagh there is a wide low gap, where the rim rises only three or four hundred feet above the bottom.

At the time of our visit the whole place was practically devoid of water. Only two diminutive springs were found, in addition to the pond in the crater and a larger loch with beds of reeds in a hollow at the base of an outlying hill to the north. Dry water-courses alone bore witness to the floods occasioned by the melting snows in spring, a patch of which lingered on in a sheltered gully on the crater-wall below Mahalitch till the very end of June. In the surrounding plains, however, at the end of May a good deal of water was still lying—the preceding spring having been marked by an unusually heavy snowfall.

As might have been expected, the vegetation of the Kara Dagh was far from luxuriant. Everywhere were rocks. Most of the lower parts had a scanty soil, sometimes composed of volcanic scoriæ or of gravel washed down by the spates, but everywhere studded with boulders or rock-débris.

The main features of the vegetation were as follows:—

Oak-woods clothed considerable areas of the southern and south-eastern slopes of the central mass. The trees were small, not reaching a greater height than perhaps 25 feet. Ground-vegetation in the woods was scanty. The woods reached an altitude of considerably more than 6000 feet.

Oak-scrub was a distinct type of vegetation, which clothed many of the slopes between 4000 and 6000 feet, sometimes continuously over large areas, sometimes in scattered clumps. The mode of growth of these oaks was always as though they had been coppiced, several stems rising together from the root. A specimen has been identified (with some doubt) as *Quercus lusitanica* Lam.

The rounded bottom of the great crater and some of the higher slopes of the central mass were covered with grass.

The gravel-slopes often supported an open, tufted, herbaceous vegetation; at other parts on the rocky hill-sides, scattered bushes and herbs grew on the scanty soil between the boulders.

In the past, in early Christian times, the Kara Dagh was the site of the town of Barata, situated in a sheltered hollow between some of the outlying hills (Göz D. on the one hand, Kizil D. and Tchet D. on the other). Around this ancient site grew trees and shrubs, such as *Pyrus malus, P. salicifolia, Prunus kotschyi, Elæagnus angustifolia, Celtis caucasica, Rhamnus oleoides, Colutea arborescens,* and others. In one of the high glens, where a spring was situated, there were also a good many deciduous trees, some of large size.

At the time of our visit, the human inhabitants of the Kara Dagh were few, and were living in two small villages of houses built of baked mud, one situated among the ruins of Barata and known as Maden-Sheher, the other among the ruins of an ancient ecclesiastical settlement near the crater and going by the name of Deilé.

The bird-life of the Kara Dagh was fairly rich and varied, considering the peculiarly extreme nature of the climate—great drought in summer, great cold and much snow in winter. Practically all the information gathered regarding it, along with that from the other localities, will be found in the subjoined annotated list of birds.

An explanatory note with regard to this list is desirable. I had with me the following books: Schmiedeknecht's 'Wirbelthiere Europa's' (1909) and the trusty companion, Howard Saunders' 'Manual of British Birds'; with the help of these and a good field knowledge of our Scottish avifauna, I was able to identify the majority of the species not already known to me. For the rest, shortly after returning home, I consulted the volumes of Dresser's 'Birds of Europe' (1871–1881) and the 'Catalogue of the Birds in the British Museum,' from which it was possible to identify various others. Recently I have consulted Dresser's 'Manual of Palæarctic Birds' (1902–3) and the same author's 'Eggs of the Birds of Europe' (1910), which contains more recent information as to the breeding-range and nesting-habits of all species known to occur in the western Palæarctic area. In the nomenclature of the various species mentioned in the following list, I have adhered strictly to that employed in the last-mentioned work, in the Preface to which the author states that he is "unable to recognise many of the vast number of subspecies which have been and are still being described." For the present purpose, this is all the more convenient, inasmuch as it would be impossible to refer the birds to their subspecies in the absence of hand-specimens. In a few cases I did actually handle dead specimens (for example, *Gyps fulvus*, *Caccabis chukar*, *Columba livia*, *Sitta neumayeri*, and *Pterocles arenarius*), but a wing and foot of the last-named (which I now have) were the only specimens preserved.

The information will be found to refer chiefly to the avifauna of the Kara Dagh (see introductory section), but any notes from other districts are also included. The list of birds found in the Kara Dagh (marked with a *) numbers thirty-three. Of the remaining twenty-seven, eight which were only seen in the coastal district near Constantinople, are placed in brackets.

Among points of interest may be mentioned the extension of the known breeding-range of *Sturnus unicolor*, notes on the nesting-habits and song of *Melanocorypha bimaculata*, and on the nesting of *Cossypha gutturalis*, hitherto almost unknown.

1. *Turdus merula L.

Several were seen and heard singing in the woods and hedgerows near Scutari in early May.

In the Kara Dagh, the Blackbird was not uncommon on some of the higher slopes covered with oak trees and scrub. On May 26 one of the men led me to a nest of this species, containing two young birds about four days old. It was built on the broken stump of a small oak tree in the woods near the summit of the highest ridge, at an altitude of perhaps 6800 feet.

2. *Monticola saxatilis L.

This species frequented the dry rocky mountain-sides which are so abundant in the Kara Dagh. It was less numerous than its congener next to be mentioned. On May 30 I saw a pair of old birds carrying food in their bills, and on June 10 a family of young birds were seen, just able to fly, accompanying their parents, at about 4500 feet.

3. *Monticola cyanus L.

The Blue Rock-Thrush was not uncommon in the Kara Dagh, frequenting localities similar to those favoured by *M. saxatilis*; I seldom observed it below 4000 feet. The sweet whistling of one of the male birds among the crags on the Göz Dagh † was one of the most beautiful sounds I remember hearing in Nature.

† One of the outlying peaks of the Kara Dagh.

4. ***Saxicola isabellina** Rüpp.

Common in the open plains of the plateau. I found a nestful of full-fledged young in a Citellus-burrow, about 15 inches from the mouth, in the plains south of Konia on May 23.

In the Kara Dagh some of these Wheatears frequented the wide grassy bottom of the great crater (about 5000 ft.), and my notes also record that "I have seen them at various heights in the mountains" (this probably only refers to the lower parts).

5. **Saxicola œnanthe** L. (?).

Several Wheatears, which I believed to be of this species, were seen on the hill-sides above Scutari on May 9 and 13. There is more doubt about a record of one or two seen near Eski-Sheher on May 19—I think these may have been *S. isabellina*.

6. ***Saxicola albicollis** Vieill.

This Wheatear was not uncommon about the slopes of the Kara Dagh.

About the middle of June a family-party was to be seen about the vicinity of our camp during several days. In the first week of the same month a peasant who had caught a hen Wheatear on the nest (which contained three eggs) brought the bird and nest bodily to me. The former escaped before I was able to examine it, but I believe it was of this species. The cock-birds I watched had black sides of the head, wings, and terminal part of tail, the rest pure white, with sometimes a little grey on the white back.

7. ***Cossypha gutturalis** Guérin.

Fairly common on the lower slopes of the Kara Dagh in those parts where bushes afforded it sufficient cover to suit its skulking habits.

According to Dresser (1910) the White-throated Chat breeds in Palestine, Asia Minor, Turkestan, and Persia. I found about half-a-dozen nests of this bird. Dresser further states that he only knows of the nest having been found on two occasions, both near Smyrna, in 1864 and 1905:—

May 24th. Nest with four eggs (hard-set), about 3700 ft.
,, 25th. ,, ,, ,, ,, (fresher), about 3800 ft.
,, 27th. ,, ,, five eggs (hard-set), about 3900 ft.
,, 29th. ,, ,, three eggs, one chick.
[May 27th. ,, ,, four chicks (very young).]
[June 9th. Nest used and empty, 4800 ft.]

The nests were all built in small bushes, isolated or on the borders of thickets. I only saw the female incubating, and she usually sat very close, almost allowing one to touch her before she flew off. Both parents were difficult to observe, as they kept persistently to the shelter of the bushes, and one could seldom obtain more than a glimpse as they flitted from one bush to the other. I have no notes of the construction of the nest. I was not quite certain of the specific identity of the last two nests in the list. The chicks were covered with dark down. One of the eggs which I now have, does not differ from the description given by Dresser.

[8. **Daulias luscinia** L.

Fairly common in gardens and groves in Scutari and the neighbourhood. A good many Nightingales were also heard singing among the orchards and groves near the railway-line on our journey to Eski-Sheher on May 18 until the mountainous district of the Sangarius valley was reached.]

[9. **Sylvia cinerea** Lath.

Several were seen in and near Scutari.]

10. **Sylvia hortensis** Bechst.

Several Garden-Warblers were seen at Scutari.

On June 30th I found a nest containing young, "which I am almost certain belonged to this species, as I saw a parent at a few feet away," at Konia. I was, however, not very well acquainted with this species. Dresser (1910) gives its breeding-ranges as: "Europe . . . . south to the Mediterranean and in Asia east to the valley of the Yenesei."

11. ***Sylvia orphea jerdoni** Blyth.

This Warbler was not uncommon in the Kara Dagh, where I found five of their nests. At the lower levels (about 3800–4000 ft.), where four of the nests were situated, there were fresh eggs and newly-hatched young during the last week of May. In the case of a nest found later on, at 4800 feet, the eggs were not laid till after June 8. The clutches varied from four up to (in one case) six. I brought home several of the eggs, which Mr. W. P. Pycraft, on their being submitted to him, was good enough to identify.

A few Warblers of the genus *Phylloscopus*, also some Tits, were seen at Scutari.

12. ***Sitta neumayeri** Michah.

The Rock-Nuthatch was fairly common in the Kara Dagh, where localities suited to its habits abounded.

I found one of the remarkable nests of this bird on the Göz Dagh on May 30. It was solidly built of mud or clay, and shaped like a bowl, the top being placed against a vertical rock-face, while the base of the bowl, narrowed and elongated, and projecting horizontally, was pierced by the entrance-hole, an inch or two in diameter. An overhanging ledge sheltered the structure from the rain, while some nine or ten feet of smooth vertical rock protected the Nuthatches' dwelling from terrestrial marauders; but a peasant who was with me succeeded in scrambling up (apparently by his finger- and toe-nails—his feet were bare), and, thus disturbed, five or six young Nuthatches flew out.

During the first half of June a family of these birds, parents and young, gave us great delight by frequenting the camp at Deilé, playing and feeding round the tents in the most unconcerned way.

13. **Motacilla alba** L.

A family of adults and full-grown young White Wagtails was seen beside a pond at Kumbet on the 7th of July.

14. ***Lanius minor** Gmel.

Fairly common in the Kara Dagh, but local, being found chiefly in the low-lying sheltered part near Maden-Sheher, where the warm sun beat down all day. I found six nests in all, five with fresh eggs between May 27 to 29 in the low locality (about 3700 feet), and one in process of construction at 5000 feet on June 21. All were built in small trees at heights varying from five to nine feet (there were no trees much above this height in the localities frequented by the Shrikes). The favourite tree was a species of thorny pear (*Pyrus salicifolia*).

The nests were compact and well made, formed on the outside chiefly of the green shoots and leaves of the tree in which they were built. The full clutch consisted of five eggs. I only saw one insect—a beetle—impaled on a thorn, otherwise one might have imagined they preferred the thorny trees for convenience in this matter.

15. ***Lanius collurio** L.

Not uncommon near Scutari.

One or two were also seen at Eski-Sheher, and on May 25 I saw a pair in the Kara Dagh in the locality frequented by the Lesser Grey Shrikes.

16. ***Hirundo rustica** L.

In the Kara Dagh a few of these Swallows nested on the mud-houses at Maden-Sheher. I also saw them at various other places in the plateau and at Constantinople, but omitted to note these.

[17. **Chelidon urbica** L.

My only note of this is "not very common" (Scutari).]

18. **Cotile riparia** L.

At Eski-Sheher the Hodja-Su, a small sluggish river, has cut for itself steep banks, often nearly perpendicular for a height of four to six feet above the water, in the alluvial loam, and in these I found a good many Sand-Martins nesting on May 19.

19. ***Cotile rupestris** Scop.

I met with these Crag-Martins in the Kara Dagh. A number of them frequented the crags and cliffs on the Göz Dagh, where they probably bred in the numerous holes and crevices, as some were seen entering these. I endeavoured one day to reach some of the spots, but my pains were unrewarded, except by some very close views of the birds as they wheeled below, so that I was able to see plainly the white spots on the webs of the outspread tail-feathers.

On June 11, however, I found a nest built in a little niche in an overhanging part of a cliff in another part of the Kara Dagh, near Deilé. Standing underneath I could almost reach this nest, and was able to see that it was built of mud, much like that of a Swallow, and lined with feathers. There was only the one pair of birds in the neighbourhood of this nest.

20. ***Carduelis elegans** Steph.

I saw three different pairs of Goldfinches in the Kara Dagh, all in the higher parts (5000 to 6000 feet). Of two of these pairs the nests were found, the first empty on June 8, the second on June 10 with four rather hard-set eggs. Both were placed in oak bushes, in rough ground covered with clumps of the same.

At Konia on June 29 I saw a pair flying about accompanied by their young, and have also a note: "Goldfinches are not uncommon about here."

21. **Passer domesticus** L.

This species is mentioned in my list for Constantinople, but unfortunately I have almost no notes of Sparrows. I wrote down later, in revising my journal, that I remembered seeing a number of House-Sparrows at the station at Eski-Sheher and also, I thought, at other railway-stations.

22. **Passer hispaniolensis** Temm.

At two different railway-stations in the plateau I identified examples of this bird, the males of which are easily distinguished from the House-Sparrow by the black on the breast and flanks. These Sparrows were consorting with their town-cousins about the station-buildings, although Dresser (1902 and 1910) says they avoid human habitations.

23. ***Fringilla cœlebs** L.

It was very refreshing to hear the cheery song of the Chaffinch one day towards the end of May, bringing thoughts of home to the mind, as I was returning to camp from the higher parts of the Kara Dagh. Two or three of them were in song in a glen at between 5000 and 6000 feet elevation. I saw no others.

24. ***Emberiza miliaria** L.

Several Corn-Buntings were heard in and about Scutari in the first half of May. On the journey from Constantinople to Eski-Sheher on May 18 they were "pretty common in the plateau, and were in evidence all the way up, except in the very mountainous parts."

Kara Dagh, June 10: one heard in song at 4300 feet. June 13: several seen and heard a little above 5000 feet (near the great crater).

25. ***Emberiza melanocephala** Scop.

The Black-headed Bunting was not uncommon on the slopes above Scutari.

Near Eski-Sheher I saw several at Dorylaion, where the plain for a long distance around was bare of any bush or tree.

In the Kara Dagh they were fairly common from the base up to 5000 feet at least. I found five nests in all. Four eggs appeared to be the full clutch, and these were laid about the last week of May in the case of three nests found about 4000 feet near Maden Sheher, but later (second week of June) in at least one of the two nests found about 1000 feet higher. These birds frequented rough ground with bushes or scrub, and the nests were all built in bushes at a height of from two to five feet. They were formed chiefly of dry grasses, and not very substantially at that.

The song of this bird varied rather markedly in the different districts: those I listened to at Scutari seemed to say "Tit-tit-pretty-pretty-come-along-to-tea-a-ee"; the Kara Dagh birds were not so thoughtful for the comfort of their better halves and sang a shorter song.

26. ***Emberiza hortulana** L.

Fairly common on stony, bushy hill-sides above Scutari, also in similar localities in the Kara Dagh.

27. ***Alauda arborea** L.

One or two pairs of Wood-Larks were seen in the Kara Dagh at about 4900 feet in broken country with patches of oak-scrub.

28. ***Melanocorypha bimaculata** Ménétr. (?).

In the Kara Dagh, Calandra Larks were fairly common. I have identified them with the eastern species, *M. bimaculata,* from the fact that the black corselet in such specimens as I was able to observe appeared to be continuous across the chest. The locality is rather to the westward of the breeding-range indicated by Dresser (1910, p. 324) for the species ("Transcaspia, in Asia through Persia and Afghanistan . . . ." etc.), and in the absence of specimens it is as well not to be too confident of identification.

Little seems to be known regarding the nesting-habits of the Eastern Calandra Lark. Dresser (1910) says the only eggs he has seen are those obtained by Zarudny at Kirchjar, Transcaspia.

These Larks I found in the Kara Dagh, frequenting the open parts up to at least 6000 feet. Calandra Larks were also seen in some other districts in the plains or low hills, but I am unable to say whether they were *M. calandra* or *M. bimaculata.*

I found one of their nests in the Kara Dagh on May 24, built under the shelter of a tuft of green herbage on a dry gravelly slope, not far from the Keklik's (Partridge's) nest mentioned below. It was rather deep, constructed of dry grass etc., and when first found was empty. Four days later it contained two eggs; these the birds subsequently deserted, and I took them. One of them measures 25·2 × 18·5 mm. In colour they are nearly white, closely freckled all over with dull brown, and with underlying paler spots of yellowish brown and blue-grey.

The singing of *M. bimaculata* is said to be similar to that of *M. calandra* (Dresser, 1910, p. 324), which bird is described as "springing from the ground and with a graceful undulating motion describing a series of large circles until it rises to an immense height" (Dresser, 1881, p. 369, quoting letter from Mr. G. F. Mathew). Another observer (von der Mühle) states that it never soars so high as *Alauda arvensis* (*l. c.* p. 369). Other writers do not mention the spiral soaring.

The Calandra Larks in the Kara Dagh and elsewhere did not go in for spiral soaring—not they. They had a loud and not unpleasant song, which they uttered while hovering, usually not at a great height, above the ground. The song was not continuous; the bird paused after every few phrases, as though the singer had to stop to think between, and it lacked most of the pleasant imitativeness that lends so much charm to the Skylark's song—a repetition of short warbling strains, with few clear notes.

29. **Sturnus unicolor** Temm.

So far as I am able to say, this was the only species of *Sturnus* I met with in the plateau of Asia Minor. Starlings were pretty common about many of the towns and villages in the plateau. At Eski-Sheher (May 19), and again at Bardatchi (July 6), I watched Starlings at short range with a powerful glass, and on these two occasions certainly they were the black unspotted *S. unicolor*.

There were no Starlings in the Kara Dagh. At Kölit-Oglu on July 1 there were a good many Starlings, which I entered in my journal at the time as "probably *S. unicolor*."

Dresser (1910) does not state that this Starling nests anywhere to the eastward of Sicily and Sardinia, but quotes

Canon Tristram's authority that it visits the plain of Sharon in Palestine in winter, from which one might expect that it would be found in summer somewhere to the north of that locality.

30. ***Pastor roseus** L.

A party of fifteen Rose-coloured Starlings was seen at Dorylaion, near Eski-Sheher, on May 19.

In the Kara Dagh, flocks up to 300 in number passed our camp on several occasions about the end of May, but, although they appeared to follow a definite route, I never discovered whence they came or whither they went.

31. ***Garrulus glandarius** L., ? subsp. **krynickii** Kal.

On May 26th I saw three Jays in the oak-woods on the heights of the Kara Dagh (about 6000–7000 feet).

One was also seen near Scutari in May.

32. ***Pica rustica** Scop.

At Eski-Sheher, on May 19, I found four Magpies' nests, all of which contained young birds. These were all situated within a small area of cultivated ground (market-gardens) interspersed with rows of trees, near the Hodja Su, just outside the town. At the same spot several other nests were observed.

In the Kara Dagh, Magpies were not uncommon. I found one nest with seven partly incubated eggs on May 25 at about 4000 feet, near Maden-Sheher. Several disused nests were also seen in various parts, and in the great crater I saw one day among the trees, beside the *yaila*, several Magpies and at least one of their nests. On two occasions also, about the end of May, fledglings were brought into camp by peasants.

33. **Corvus monedula** L.

Several Jackdaws were seen at Scutari, and also at Sedja-ed-Din. The grey patch on the hind neck was noticeably whiter than in our British Jackdaws.

[34. **Corvus cornix** L.

Hooded Crows were common in Constantinople, where they nested in the cypress trees.]

35. **Cypselus apus** L.

On the plateau this Swift was very common in the towns. At Konia, in the end of June, great numbers used to fly screaming overhead in the evenings. Common in Constantinople.

36. ***Cypselus melba** L.

This species was common about the old walls of Stambul and near other tall buildings in Constantinople. On June 6 I saw one near the camp at Maden-Sheher. This was the only one seen on the plateau.

37. **Coracias garrulus** L.

Seen commonly from the train during the second half of the journey from Eski-Sheher to Konia on May 20, in parts of the plain where there were groves of low trees etc.

38. ***Merops** sp. (? **M. apiaster** L.)

Several Bee-eaters frequented a certain locality in the Kara Dagh (a small glen at the back of the Göz Dagh). In a small sand-bank I found several deep holes like those of Sand-Martins, which I thought were possibly nesting-places of the Bee-eaters.

39. **Upupa epops** L.

One Hoopoe was seen behind an old *khan* at the base of the Bos Dagh, May 22. Several others were noticed at villages in the Konia district.

40. ***Cuculus canorus** L.

Fairly common in the Kara Dagh in suitable localities, but apparently it did not come very low down (below 4000 feet?).

I am rather of the opinion that I saw and heard a Great Spotted Cuckoo (*Coccystes glandarius* L.) in the Kara Dagh.

41. ***Athene noctua** Scop.

The Little Owl, the only Owl I saw, appeared to be pretty well distributed in Asia Minor. I have notes of it from Scutari, the railway between Eski-Sheher and Konia, Bos Dagh, Kara Dagh, and Eski-Sheher district. It was often seen out in broad daylight, but one which I caught in an underground passage beside Bos Dagh seemed dazed on being brought into the sun, and did not struggle at all.

42. ***Gyps fulvus** Gmel.

Half-a-dozen of these Vultures were sometimes seen at one time near Maden-Sheher in the Kara Dagh, and one day I had an opportunity of examining a bird which had been shot by a villager. Other Vultures seen at carcases in the plains in the Konia district were, I think, also Griffons.

43. ***Neophron percnopterus** L.

Several seen near Scutari, one seen near Konia.

In the Kara Dagh two or three pairs of Egyptian Vultures nested on Göz Dagh. High up on the face of the cliff of the great pit on Göz Dagh, several little circular chambers with rectangular window-like entrances had been carved out of the living rock by the hand of man in past ages, and these now formed the Vultures' nurseries. One of them was reached without difficulty by a series of narrow ledges, and in it I found two eggs, one of which was empty with a big gash in the side. The other I took, but found it considerably incubated (May 28). It is an unusually long specimen, measuring 75 × 52 mm. The nest was formed of a few sticks, garnished with wool and odds and ends of various character. The floor of the chamber was thickly strewn with tortoise-shells, few of which were above three or four inches in length. The majority were unbroken. Tortoises are very common in the Kara Dagh.

[44. **Buteo vulgaris** Leach, subsp.

One or two seen near Scutari, May 13.]

Eagles of one or more species were seen not infrequently in the Kara Dagh. I was unable to identify these, but on

May 26 I found an apparently deserted nest with two eggs, which I believe was probably that of the White-tailed Eagle, *Haliaëtus albicilla* L., a bird which Selous found to be common in Asia Minor ('British Birds,' Aug. 1907).

The eggs were white, and one measured 70 × 55 mm.

The nest was a huge mass of sticks, four feet deep by six in diameter, placed right upon the top of a twenty-foot oak tree among the woods which clothed the slopes of Mahalitch Dagh.

45. ***Milvus ictinus** Sav.

Very common in Constantinople, especially at the old walls of Stambul, where they fairly swarm.

Kites were also common near towns and villages in the plateau, and on May 26 I found an empty nest belonging to a pair in the Kara Dagh.

On May 11 and 12 those at Constantinople were laying. On the 19th a nest at Eski-Sheher had fresh eggs, and on the 22nd a nest in the garden at H.B.M. Vice-Consulate at Konia had two eggs and a chick. The young in this same nest were full-fledged on June 30, but had not flown.

46. ***Falco cenchris** Naum.

The Lesser Kestrel was very common in the plateau, but was not seen elsewhere. A number frequented the ruins near Maden-Sheher in the Kara Dagh, and in many other districts they were numerous. A good many nest on the ruined Zazadin Khan near Konia, where they had begun to lay on May 22. One of the two eggs found there was lying in contact with a Rock-Pigeon's. On July 7 several pairs were feeding young in the nest, chiefly with mice, at Seja-ed-Din; these nests were built in holes in mosques and houses—one pair had a nest in a hole only five or six feet from the ground at a corner where passers-by were frequent.

Next day young birds were seen hunting "on their own" in the open country, a favourite perch being the telegraph-wire.

[47. **Phalacrocorax carbo** L.

One seen on a breakwater in the Bosphorus.]

48. **Ardea cinerea** L.

A colony of about 20 pairs nested on one large tree near the river at Eski-Sheher. The young were apparently mostly out of the egg by May 19, judging by the numbers of shells strewn below.

49. **Ciconia alba** Bechst.

Very common in the plateau in some districts, especially near Eski-Sheher and between that place and Konia, where "great flocks" were observed on May 20. We passed, too, on that day great numbers of corpses scattered in ones and twos beside the railway-line. I have since heard, on the authority of Mr. Edwin Whittall, of Constantinople, that the Storks on their arrival in 1907 were unable to find sufficient food, owing to the snow, which persisted much later than usual. Great numbers perished, and next year—a normal season—they were several weeks later than usual in arriving.

At Kumbet, on July 7, two or three nests with well-grown young were seen, built on platforms specially erected on the house-tops for the encouragement of these Storks, which are supposed to bring luck with them.

50. **Ciconia nigra** L.

One was seen on July 6 "in a cultivated valley with some trees and a stream, some miles south-east of Saidi-Ghazi."

51. **Tadorna casarca** L.

One, a drake, was seen on a small reedy pond at Kumbet on July 7.

52. ***Columba livia** Bonn.

Some of these birds nested at Zazadin Khan, where on May 22 I found two eggs and two well-grown young birds in the same nest; one other egg was also seen.

In the Kara Dagh a colony of more than a score nested in the cliffs on Göz Dagh.

53. ***Turtur** sp.

Turtle-Doves were pretty common in the Kara Dagh among the oak-scrub. On June 13 I found a nest with two young a few days old.

In cultivated land near Kumbet I saw eight or ten Turtle-Doves on July 7.

I am unable to say with certainty to which of the three species breeding in Asia Minor (*T. communis, T. senegalensis,* and *T. cambayensis*) these birds belonged, although I put them down at the time as *T. communis.*

54. **Pterocles arenarius** Pall.

I shot a Sandgrouse of this species in the plains near the Kara Dagh. It was one of a party of six or eight. In this district similar small parties were not uncommon.

Three hard-set eggs of a Sandgrouse were brought to me from the plains on June the 12th, and another, nearly fresh, about the 23rd.

55. ***Caccabis chukar** Gray.

Common all over the Kara Dagh. They are very wary, owing to the persecutions of the villagers, who stalk them persistently with their old guns, even in the nesting season. The males (?) have a habit of sitting on guard on a prominent rock, where they cluck away to their mates in the bushes—hence the Turkish name " keklik."

I found two nests with fresh eggs near the end of May, one built under a bush, the other in a tuft of green herbage on an open gravelly slope. Other fresh eggs were brought to me later, during June.

56. **Vanellus vulgaris** Bechst.

Between Eski-Sheher and Konia several parties of Lapwings of a few pairs each, were seen from the train on May 20, in marshy districts.

57. **Himantopus candidus** Bonnat.

On May 23 a pair were seen by a sluggish stream in a marshy part of the plain between Konia and the Kara Dagh; " from their behaviour, they did not seem to have eggs or young."

[58. **Hydrochelidon hybrida** Pall.

This and other species of Terns and Gulls were seen on the Bosphorus in May.]

[59. **Puffinus yelkouanus** Acerbi.

Flocks of these "Lost Souls" or *Yelkovan* were to be seen constantly passing up or down the Bosphorus. The people of Constantinople commonly suppose that they never alight on the water.]

60. ? **Podicipes fluviatilis** Tunstall.

"Plenty of small Grebes" were seen on the pond at Kumbet, July 7.

XXI. *Notes from Mesopotamia.*

By Capt. R. Meinertzhagen, M.B.O.U.

(Text-figure 7.)

A few notes on the birds observed during a trip up the Tigris in January, 1914, may be of interest to readers of 'The Ibis.'

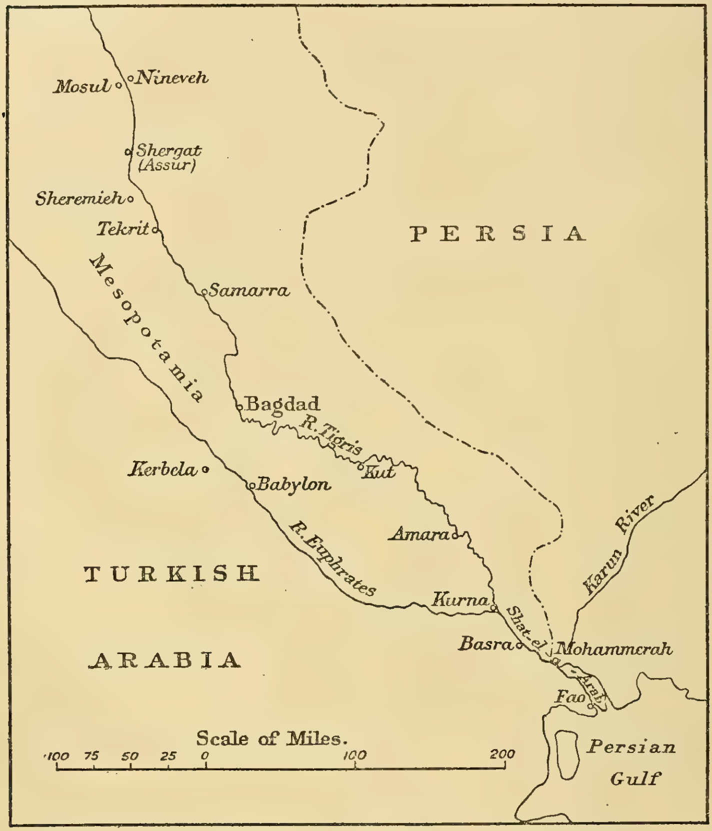
Though the list of birds which were seen must not in any way be considered exhaustive, it will give any future traveller in these regions an idea of what he may expect to find in Mesopotamia during the winter months.

Entering the Shat-el-Arab at Fao, I travelled up by river-boat to Bagdad, whence a visit was paid to Babylon and Kerbela. Mosul was visited by carriage, and the return journey to Bagdad made by raft, and thence by river-boat to Basra and Mohammerah.

Though the trip was of short duration, I had exceptional opportunities for observing bird-life both in the desert and on the river.

A fact which was noticed at the start was the European character of the birds seen, scarcely any being purely Asiatic. Again, nearly all birds seen were migrants from the north. The Tigris at Mosul is about 200 yards wide, with frequent sandy islands. In places the river broadens out to half a mile, with marshes on either side, whilst about Tekrit the river passes through low hills, which confine it to a rapid flowing bed with high banks. At Sheremieh the river again broadens out and flows through level plains to the sea. From Amara to Kurna, the Tigris passes through vast marshes and reed swamps, and from Kurna to Fao the banks are low and covered with date gardens.

Text-fig. 7.


Mosul
Nineveh
Shergat (Assur)
Sheremieh
Tekrit
Mesopotamia
Samarra
PERSIA
Bagdad
R. Tigris
Kut
Kerbela
Babylon
Amara
R. Euphrates
TURKISH
ARABIA
Kurna
Shat-el-Arab
Basra
Mohammerah
Karun River
Fao
Persian Gulf
Scale of Miles.
100 75 50 25 0 100 200

Sketch-map of Mesopotamia to show the localities visited by Capt. Meinertzhagen.

Except for the date-palms, no woods of any sort exist. Occasional patches of dwarf poplar and tamarisk are met with, and on the river-banks there is a little cultivation, but elsewhere one finds an expanse of rich uncultivated soil, that only requires water to convert desert to the ancient Garden of Eden. Around Mosul the country becomes hilly, and carpeted with short crisp grass, broken at intervals by outcrops of white gypsum.

Of Passerine birds, the Corvidæ are well represented. The Raven (*Corvus corax*) was seen as far south as Kut and was fairly abundant near Tekrit and Mosul, but never in flocks. It was shy, and not so tame as the large flocks of these birds, which visit India every cold weather. The Hooded Crow (*C. cornix*) is abundant from Fao to Bagdad. Farther north it becomes scarcer, and none were seen at Mosul. The farther south these birds were seen, the whiter became their mantle. Some seen at Basra appeared pure black and white, the latter having a faint pink tinge. This variety (*C. capellanus*) was never observed north of Bagdad, whilst only one of the ashy-grey mantled birds was noticed south of Bagdad. Rooks (*C. frugilegus*) were in enormous flocks from Bagdad northwards, and a few were seen between Kut and Amara. A large flock of Jackdaws (*C. monedula*) was seen at Mosul, but none elsewhere. Magpies (*Pica rustica*) are common around Bagdad, Babylon, Kerbela, and northwards, and are extremely tame. They can frequently be seen perched on camels' backs.

The White-eared Bulbul (*Molpastes leucotis*) is very common at Mohammerah and Basra, and a few were seen at Bagdad and Babylon. The Allied Grey Shrike (*Lanius assimilis*) was seen at Sheremieh on Jan. 16, and several Finsch's Grey Shrikes (*L. fallax*) were noted on the lower Tigris near Kurna.

Gould's Starling (*Sturnus purpurascens*) was everywhere abundant and roosts in vast flocks in the marshes of the lower Tigris.

I had hoped to see many sorts of Chat, as the country is so eminently suited to them, but only the Wheatear (*Saxicola œnanthe*) was noted, and it was scarce around Babylon and Tekrit. Among the ruins of Babylon, Nineveh, and

Assur (Shergat) the Black Redstart (*Ruticilla titys*) was common, whilst a solitary Robin (*Erithacus rubecula*) was seen in some tamarisk scrub near Mosul.

The Sparrow (*Passer domesticus*) is common everywhere, and the Rock Sparrow (*Petronia stulta*) was observed in the hills around Mosul. A small flock of Goldfinches (*Carduelis elegans*) was seen at Bagdad on Jan. 2, and Chaffinches (*Fringilla cœlebs*) were noticed at Tekrit and Mosul. There was a small flock of Linnets at Nineveh, but whether they were *Acanthis cannabina* or *A. fringillirostris*, I am unable to say. The Pine Bunting (*Emberiza leucocephala*) was seen just north of Bagdad, and a solitary Ortolan (*E. hortulana*) was noticed at Mosul.

The Pied (*Motacilla lugubris*) and White (*M. alba*) Wagtails were plentiful throughout, the latter being the commoner of the two in Basra and Mohammerah. I saw an undoubted Grey Wagtail (*M. melanope*) at Bagdad, and a few Black-headed Wagtail (*M. melanocephala*) on the river between that place and Mosul. Several Pipits were noticed, but their identification was uncertain. The Crested Lark (*Galerita cristata*) is very common from Mohammerah to Mosul, and can frequently be seen on the flat earth-roofs of houses. The Skylark (*Alauda arvensis*) was everywhere in large flocks, but never away from cultivation.

Of the Picariæ, a solitary Roller, probably *Coracias garrula*, was seen sitting on a telegraph wire near Amara, and Kingfishers of three varieties were observed. The Pied Kingfisher (*Ceryle rudis*) extends from Fao to Mosul, and as many as eleven were counted together at one time. Several Common Kingfisher (*Alcedo ispida*) were seen at Basra and in the marshes near Kurna, whilst the White-breasted Kingfisher (*Halcyon smyrnensis*) is plentiful at Basra and Mohammerah, where its noisy call is commonly heard in the date gardens.

The Southern Little Owl (*Athene glaux*), conspicuous by its light colour, was plentiful along the river-bank and in the ruined cities of Babylon and Assur, whilst at the former place an Eagle Owl (*Bubo ignavus*) blinked at me from the ruins of the Tower of Babel.

Of the Accipitres, the Vultures appeared to be rare. One Egyptian Vulture (*Neophron percnopterus*) was seen near Bagdad, some large Vultures were noticed at a great height near Mosul, and a small lot, probably *Gyps fulvus*, were found roosting in a palm grove near Amara. The Imperial Eagle (*Aquila heliaca*), Pallas's Sea Eagle (*Haliaëtus leucoryphus*), and the White-tailed Sea Eagle (*H. albicilla*) were observed, the two latter species being common on the upper reaches of the Tigris. Four Spotted Eagles (*A. maculata*) were seen near Tekrit, and a few in the marshes near Kurna. Two large Hawks were noted near Mosul, which I think were Bonelli's Eagle (*Hieraëtus fasciatus*). The Arabs are well acquainted with this Eagle, and prize it very much for hawking gazelle and hares. Buzzards (*Buteo ferox* and *B. vulgaris*) were numerous throughout and showed great diversity of plumage, some of the former species being almost creamy white on the head and body. Montagu's (*Circus cineraceus*), Hen (*C. cyaneus*) and Marsh Harriers (*C. æruginosus*), in all varieties of plumage, haunted the marshes and sandpits. But few Falcons were observed. They were probably all Peregrine (*Falco peregrinus*) and Barbary Falcons (*F. barbarus*), as only these two species were seen in the hands of Arab falconers. At both Bagdad and Mosul falconry is indulged in by the richer Arabs. At the latter place the Great Bustard is the favourite quarry, but I was informed that it affords poor sport.

Ospreys (*Pandion haliaëtus*) were occasionally observed throughout the route, but appeared uncommon, and were certainly the most wary of all the Hawks seen. Sparrow-hawks (*Accipiter nisus*) were abundant in and around Bagdad and Mohammerah. They doubtless occur throughout the date-palm area. Black Kites (*Milvus migrans*) were very plentiful everywhere, being occasionally seen in large flocks. Near Amara a cream-coloured Kite was among a flock of *Milvus migrans*, and differed from them only in colour.

Kestrels (*Tinnunculus alaudarius*) were by far the commonest Hawk seen, being particularly fond of the high river-banks near Tekrit. Their shrill cries could be heard in every ruin, as they circled round the great hall of Nebuchadnezzar at Babylon, or under the massive Parthian arch of Ctesiphon.

The Rock Pigeon (*Columba livia*) is plentiful both in the towns and on the desert. All the large mosques form roosting places for these birds, and at Kerbela many thousands could be seen any evening on the golden dome of Hussein's Mosque. Doves, mostly *Turtur risorius*, frequented the date groves of Basra, Bagdad, and Kerbela.

Two species of Sandgrouse were observed. The Large Black-bellied Sandgrouse (*Pterocles arenarius*) was noticed near Babylon and Samarra, whilst a large flock of Pin-tailed Sandgrouse (*Pteroclurus alchata*) was seen amongst the ruins of Assur.

Black Partridge (*Francolinus vulgaris*) are found from Mohammerah to Mosul in suitable places, and can frequently be seen from the river-boat. The Chukor (*Caccabis chukar*) was seen at Nineveh and among the rocky hills near Mosul, and a brace of Quail (*Coturnix communis*) on an island near Tekrit. Seesee (*Ammoperdix bonhami*) are very plentiful among the ruins of Assur, where large bags have been made, and we saw a large covey on the river-bank a few miles north of Samarra.

Coot (*Fulica atra*) occurred in suitable localities, but never in large quantities.

Great Bustard (*Otis tarda*) seemed fairly plentiful around Mosul, for we saw two lots of seven and fifteen respectively near that place. This species has been killed as far south as Bagdad.

Of Waders, many were seen and but few identified. The Plover (*Vanellus vulgaris*) was well distributed, whilst many Cream-coloured Coursers (*Cursorius gallicus*) were seen on the desert near Babylon and Bagdad. The Red-wattled Plover (*Sarcogrammus indicus*) seemed scarce, only three lots being seen, all north of Bagdad. One large lot of Curlew

(*Numenius arquata*) was noted near Tekrit, and a solitary Avocet (*Recurvirostra avocetta*) adorned a sandspit near Bagdad. Of other Waders the following were identified :—

Redshank (*Totanus calidris*).
Green Sandpiper (*T. ochropus*).
Common Sandpiper (*T. hypoleucus*).
Dunlin (*Tringa alpina*).
Little Stint (*T. minuta*).
Curlew Sandpiper (*T. subarquata*).

Snipe are plentiful near Basra and Mohammerah in the winter, whilst a Woodcock (*Scolopax rusticola*) was killed at Bagdad some years ago.

A noticeable feature of travelling up the Tigris is the quantity of Gulls that follow the boat. At Mohammerah and Basra the Black-headed Gull (*Larus ridibundus*) is abundant, but was not seen north of Kurna. The Dark-backed Herring Gull (*L. affinis*) was seen on the Shat-el-Arab and on the Tigris as far north as Amara. A few Yellow-legged Herring Gulls (*L. cachinnans*) were seen at Fao and Basra, and were the only Gulls at and north of Bagdad. They were also frequently seen far from the river, scouring the desert for food. A Tern, usually singly or in pairs, was occasionally seen on the Tigris between Basra and Bagdad. I was unable to identify the species.

No river scene in Mesopotamia would be complete without the Pelican, probably *Pelecanus onocrotalus*. It is particularly tame in these parts, and in the middle of the day one can frequently pass within a few yards of a party of them asleep on a sandy island, as one silently floats down stream on a raft.

However out of the way of water, and no matter how far from the sea, there will be found the Cormorant (*Phalacrocorax carbo*). Mesopotamia is no exception, and this bird was found the whole length of the river. It is remarkable how it catches its food in such a muddy river as the Tigris, which is a dark brown in colour and which contains five times as much silt as the Nile. A human being cannot see half an inch through Tigris water, and yet we frequently saw both Cormorant and Kingfisher emerging from the river with fish. One Shag (*P. graculus*) was seen near Tekrit. It was a very old bird, and I was very surprised to find this species so far east and so far from the sea.

The Common Heron (*Ardea cinerea*) was seen everywhere in suitable localities. A large flock of Spoonbill (*Platalea leucorodia*) was seen feeding on some mud flats near Samarra, and in the marshes near Amara large quantities of Glossy Ibis (*Plegadis falcinellus*) could be seen feeding and flying about in the evening light.

During the voyage up the Tigris at the end of Dec. 1913, no White Stork (*Ciconia alba*) was seen, but on the return journey we first met with it at Samarra on Jan. 27, when two were seen sitting on the golden dome of the mosque at that place, whilst on Feb. 2 large numbers of these birds were noticed in the marshes of the lower Tigris. They apparently nest in numbers in Mesopotamia, and there are few mosques or minarets without a Stork's nest on it. In Mosul this was particularly noticeable, whilst even Jonah's tomb at Nineveh was not considered too sacred for an enormous pile of sticks and rubbish.

There is probably no place in the world where wildfowl of all descriptions congregate in larger numbers during the winter months than in the marshes of the Tigris and Euphrates. On the former river, a vast expanse of reed and marsh on either bank is sometimes black with duck. In the middle of the day many thousands of unapproachable geese can be seen sitting on some island sandspit or on the flat edge of some expanse of water, whilst in the evening the air is alive with duck and teal flighting in the decreasing light, and skein after skein of geese wend their noisy way to their feeding grounds.

Among the Anatidæ identified were :—

Grey Lag Geese (*Anser ferus*). Plentiful.
Common Sheldrake (*Tadorna canuta*). Three seen.

Ruddy Sheldrake (*Casarca rutila*). Fairly common.
Mallard (*Anas boschas*). Plentiful.
Teal (*Nettium crecca*). Plentiful.
Wigeon (*Mareca penelope*). A few seen.
Pintail (*Dafila acuta*). Fairly plentiful.
Common Pochard (*Nyroca ferina*). Plentiful.
Tufted Pochard (*Nyroca fuligula*). A few seen.
Golden-eye (*Clangula glaucion*). Fairly plentiful.
Smew (*Mergus albellus*). Only one seen.
Goosander (*Merganser castor*). Fairly common.

Only one species of Grebe was seen, and it appeared abundant in the marshes and back-waters of the Tigris from Fao to Mosul, but whether it was *Podiceps albipennis* or *P. fluviatilis* I am unable to say.

XXII.—*A Note on the Common Ringed Plover of the British Isles* (Charadrius hiaticola major *Seebohm*), *and on Coloration as a Factor in Generic Differentiation.*

By Percy R. Lowe, M.B.O.U.

It is rather a remarkable fact that in spite of the exceedingly close scrutiny to which every British species has of late been subjected, with a view to detect any evidence of differentiation which may obtain between it and the corresponding forms located on the continent—the case of the Common Ringed Plover has been entirely overlooked, or perhaps, to speak more correctly, ignored.

Thus, if one refers to the latest 'Handlist of British Birds,' compiled under the joint authority of Messrs. Hartert, Jourdain, Ticehurst, and Witherby, one finds the Common Ringed Plover of the British Isles designated as *Charadrius hiaticola hiaticola* Linn., while in the synonymy of this species we get the following note:—" *Charadrius hiaticola major* Seebohm, Hist. Brit. B. iii. p. 20 (1885)—

Seebohm separated a larger race, supposed to be resident in the British Isles, but other ornithologists have not followed him, *and the status of this race remains very doubtful.*" (Italics ours.)

Considering, as we have just remarked, the almost microscopic eye which naturalists have been focusing upon other British subspecies, it is a surprising fact that the status of Seebohm's *C. hiaticola major* could possibly have been called in question, and that ornithologists should have hesitated in following his lead; for it certainly requires no microscopic eye to recognise the validity of this subspecies. It is, in fact, very easily recognisable and is, one would be inclined to think, more worthy of recognition than some other British subspecies which have lately been differentiated. For this reason, I have thought it might be useful to bring to the notice of ornithologists the following notes, which are the result of an examination of some two hundred examples of the Common Ringed Plover contained in the British Museum and other collections.

Of these specimens, more than half were rejected as being either immature, unsexed, or otherwise wanting in the data attached; while, for the purpose of comparing the differences in coloration between the insular and continental races, only those birds were selected which had been obtained during the breeding season. It will be noticed, however, that in the lists appended below I have included birds shot in August and also birds from other localities than the British Isles, this being done for the double purpose of getting an idea of the relative measurements of the two races and of demonstrating their range as far as was possible with the material available.

Unfortunately, I have not been able to examine any specimens of the typical race—*Æ. hiaticola hiaticola* L.—from the restricted typical locality (Sweden); but as specimens from Norway were included in the examples compared, I do not think this is of any material importance.

As the results of my examination, my conclusions are as follows:—There are undoubtedly two easily recognised races of the Common Ringed Plover, viz., the eastern continental or typical race, *C. h. hiaticola,* and a western continental race, *C. h. major,* whose chief habitat is the British Isles. The points of distinction between the two races are that *C. h. major* is a larger bird in almost every respect—that is to say as regards the length of the wings; the length and stoutness of the legs and feet (this on an average very noticeable); the size of the skull (the head appearing more rounded, wider, and larger); the bill (on an average); and the body generally.

As regards coloration, the upper parts of British breeding birds, as compared with birds of the typical race at a like season, are also very obviously paler, the coloration being a pale drabby brown as compared with a very noticeably deeper and more chocolate-brown.

It is to be noted, however, that *freshly moulted* (autumn) specimens of *C. h. major* are distinctly darker on the upper parts as compared with examples in summer-plumage.

To sum up, we thus have a large pale race (*C. h. major*) and a small dark race (*C. h. hiaticola*).

The range of *C. h. major*, as far as the material available enables one to say, seems to be on all fours with the range and distribution of the paler western race of the Lesser Black-backed Gull, *Larus fuscus affinis* Reinh., *cf.* 'British Birds,' vol. vi. 1913, pp. 2 and 360; that is to say, examples from Greenland, Iceland, the coasts of France, Portugal, Gibraltar, and the Canaries, which I have been able to examine, do not seem to differ from the larger and paler race of Ringed Plover which breeds in the British Isles.

Moreover, while the larger and paler western race (*C. h. major*) pushes its southerly migrations down the western coast of Africa (as far as Cape Colony), the smaller and darker eastern race would appear to favour the eastern sea-board of the African continent, the route taken being by way of the Nile Valley.

In this connection, however, a series of immature birds, collected by Mr. D. A. Bannerman in the Canaries, is somewhat contradictory, for while some undoubtedly belong to the pale western race, others seem nearer the dark eastern race.

With regard to the northerly extension of the range of these two subspecies (*C. h. major* and *Larus f. affinis*), it is interesting to reflect that the Wyville-Thomson, Faroe-Icelandic, and Icelandic-Greenland submarine ridges seem to play an important part in the direction of furnishing a well-marked migratory track for these and possibly other western subspecies to high latitudes.

Finally, we may call attention to the fact that the smaller darker continental race (*C. h. hiaticola*) is by no means uncommon in the British Isles during at least the autumn migration, and that it is not to be confused with the Lesser Ringed Plover (*C. dubius*), which is a very rare migrant to our shores, but which may be at once identified by the absence of white in the shafts of all the primaries except the first.

The following list of some of the birds examined will give a fair idea of the relative wing-measurements and distribution of the races.

Charadrius hiaticola hiaticola L.

		Wing. mm.
♀. 23 . vi . 77.	Yenesei, Siberia	130
♀. 9 . v . 63.	Damietta, Egypt	129
♀. 9 . v . 78.	Norway	126
♀. ?	Corfu	126
♀. ?	Gennesaret, Palestine	126
♀. 22 . vii . 77.	Yenesei, Siberia	125
♀. 16 . xi . 85.	Manda Island, B. E. Africa	124
♀. v . 77.	Florence	124
♀. 1 . x . 78.	Cyprus	117

Charadrius hiaticola major Seebohm.

		Wing. mm.
♀. 19 . vi . 56.	Holy Island, Northumberland	136
♀. iv . 66.	Dungeness, Kent	135
♀. 4 . viii . 75.	Twin Glaciers Valley, Arctic	135
♀. v . 63.	Beadnell, Northumberland	135
♀. 24 . vi . 05.	Brancaster, Norfolk	134
♀. 21 . viii . 67.	Kingsbury	131
♀. 24 . vi . 05.	Brancaster, Norfolk	131
♀. 10 . v . 71.	Pagham Harbour, Devon	130
♀. 10 . vii . 80.	Romney Marsh, Kent	129
♀. 26 . iv . 72.	Gibraltar	127
♀. 20 . iii . 72.	Algeciras, Gibraltar (moulting wing-feathers).	

Charadrius hiaticola hiaticola L.

			Wing. mm.
♂.	12 . vi . 77.	Yenesei, Siberia (moulted)	132
♂.	?	Florence	129
♂.	2 . vi . 75.	Petchora, N. Russia (moulted)	128
♂.	19 . vi . 74.	Norway	127
♂.	9 . vi . 75.	Petchora, N. Russia	126
♂.	19 . vi . 74.	Norway	126
?	?	Genoa	126
♂.	9 . vi . 77.	Yenesei, Siberia	125
♂.	19 . vi . 74.	Norway	125
♂.	17 . vi . 75.	Pustozersk, N. Russia	125
♂.	17 . viii . 76.	Siberia	124
♂.	1 . x . 78.	Cyprus	122
♂.	17 . ii . 98.	Berbera, Somaliland	122
♂.	13 . vii . 99.	Christiansund, Norway	120
?	29 . iii . 87.	Durban, Natal	116
♂.	26 . iii . 71.	Damietta, Egypt	112

Charadrius hiaticola major Seebohm.

			Wing. mm.
♂.	14 . vi . 56.	Warkworth, Northumberland	138
♂.	6 . v . 73.	Havre, France	136
♂.	v . 65.	Dungeness, Kent	135
♂.	4 . v . 70.	Pagham Harbour, Devon	135
♂.	14 . vi . 56.	Warkworth, Northumberland	135
♂.	17 . viii . 74.	Greenland	134
♂.	viii . 69.	Orkneys	132
♂.	3 . viii . 97.	Hayling Island, Hants	132
♂.	3 . viii . 97.	,, ,,	132
?	iii . 72.	Gibraltar	132
♂.	24 . xii . 71.	Catala, Valencia	132
♂.	iv . 66.	Dungeness, Kent	131
♂.	26 . xi . 97.	Nulbourne, Hants.	131
♂.	27 . i . 99.	,, ,,	131
♂.	vii . 93.	Rykjavik, Iceland.	130
♂.	27 . v . 69.	Orkneys	130
?	i . 87.	Estarrêja, Portugal	130
♂.	23 . viii . 01.	Nulbourne, Hants.	129
♂.	28 . xii . 97.	,, ,,	129
♂.	14 . vi . 56.	Warkworth, Northumberland	129
♂.	25 . v . 68.	Loch Stenness, Orkney	127
♂.	13 . viii . 75.	Havre	127
♂.	27 . vi . 96.	Spitzbergen (very worn)	127
♂.	vii . 93.	Rykjavik, Iceland.	127

The average length of wing of nine females of *C. h. hiaticola* is 124 mm., of sixteen males also 124 mm. The average of ten females of *C. h. major* is 132 mm., of twenty-four males 131 mm.

Coloration as a Factor in Generic Classification.

The above note on a species of that large group of Ringed Plovers, usually recognised under the generic title *Ægialitis* *, suggests another, viz., the importance of colour as a character in the differentiation of certain genera; for the genus *Ægialitis* presents us with an excellent example for its demonstration. In the 'Handlist of British Birds,' referred to above, the genus *Ægialitis* is lumped with the genus *Charadrius* *, and in a key to the classification of British birds in the recently published 'British Bird Book' (edited by Mr. Kirkman), Mr. Pycraft has a footnote to the effect that "It is impossible without juggling with facts to recognise the genus *Ægialitis* (and others), which must be included in the genus *Charadrius*." Furthermore, Mr. Pycraft in some introductory remarks to this key gives it as his opinion that colour is a factor which should be ignored, if classification is to be framed on sound scientific lines.

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* I am personally of the opinion that by the rules of nomenclature the proper generic term for this group of Plovers should be *Charadrius*, while the Golden Plover should be *Pluvialis*.

During the past six months or so I have been, somewhat carefully, through the whole collection of Waders contained in the British Museum, and as a result, I am driven to the belief that colour, on the contrary, is a factor which certainly cannot be ignored in any attempt, based on sound scientific lines, to classify that very difficult group, and that the opinion expressed by Mr. Pycraft on this point, however true it may, or may not, be as regards other groups, is certainly quite fallacious as regards the Waders.

The genus *Ægialitis* is cosmopolitan, and as generally and hitherto comprehended, consists of a very natural and compact group of some twenty species, either more or less, according to the individual opinions of various writers. This compact group of species, besides possessing a common and very characteristic type of habitat (marine-littoral or lacustrine-littoral) and certain quite characteristic habits, is also very notable for the fact that there runs through the whole series of species composing it a certain definite colour-pattern, which is quite remarkable for its fixity and constancy, although many of these species inhabit more or less isolated areas and are separated by vast distances.

We may roughly sum this colour-pattern up by saying that it consists of more or less well-developed and usually darkly-coloured pectoral bands; a white band across the forehead; a dark frontal band immediately posterior to this; a dark loral streak; a dark post-auricular patch; a white nuchal collar or some slight variation of this; and some uniform shade of pale brown, rufous brown, buff, or cinnamon defining in a very definitely circumscribed manner the top of the head. In every species, then, this type of colour-pattern is obvious. Taking the genus as a whole and ignoring the fact that it might be, and has been, split up into two or more subsidiary groups, according to the form and colour of the bill, the length, stoutness, and colour of the legs and feet, and the colour-pattern of the tail, we find that this distinctive coloration of the head and breast runs right through every member of the group with remarkably little variation in a very constant manner.

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* The authors include under this generic name such differentiated types of Plover as the Caspian, Ringed, Golden, and Killdeer Plover and the Dotterel.

This colour-pattern is, indeed, far more fixed and constant than the form, size, or shape of the bill; for in the bills of the various species we get an extraordinary variety of forms from the short, stout, and stumpy little bill of *Ægialitis melodus*, to the long, thin, and attenuated bill of *Æ. placidus*. Thus, in a long series of species of world-wide distribution we have a colour-pattern which is fixed, constant, and obviously more ancient than the *structural peculiarities* of the bill, or for that matter, of other parts. This colour-pattern is, therefore, obviously very characteristic of the genus *Ægialitis* (as usually understood), and if a character which is very characteristic of a genus is not a generic character, the object of this note will be well achieved if it elicits information as to what it otherwise may be.

But there is another colour-character which is quite as, if not more, important than this colour-pattern which runs through the many species of the genus *Ægialitis* in the adult condition. I refer to the *colour-pattern which is so very characteristic of the downy young* of every species, even though, as I have already stated, those species may be as widely separated in point of distribution as it is possible for species to be.

This colour-pattern of the downy young is characterised by an extraordinary uniformity and similarity in all the species of this group which I have been able to examine*. It is, in fact, quite diagnostic, and in no genus of the true and restricted family *Charadriidæ* is it so uniform or so remarkable.

It is true that very much the same type of colour-pattern is exhibited in the downy chicks of the genus *Ochthodromus*, a shore-dwelling group which has become differentiated from the Ringed-Plover group; but this colour-pattern of the young Ochthodromine chicks can, nevertheless, be easily distinguished and has a distinct character of its own.

Shortly put, the most obvious point about the coloration of the downy young of the genus *Ægialitis* is the conspicuous white nuchal collar; and the next most obvious point is the very finely discrete and uniform "pepper and salt" coloration of the upper parts, the ground-colour of which only differs very slightly in the various species. On the top of the head this fine mottling is seen to be contained in a very distinctly defined patch bordered with white. Here, then, it is obvious that we have an ancestral type of plumage—a simple colour-pattern—which, in view of the very cosmopolitan distribution of the whole genus through which it uniformly runs, must be of great age, and from the point of view of any scientific system of classification, of great importance. Although purely a matter of coloration, this type of colour-pattern of the plumage is a phylogenetic character which cannot be ignored. It is absolutely characteristic of the genus. In no other group, comprised in the true *Charadriidæ*, do we find such a fixed and constant type of coloration, characteristic of their downy young; and this, I believe, for the simple reason that the Ringed-Plover group represents in the true *Charadriidæ the ancestral shore-living race*, from which all the other true Plover groups—most of which have now forsaken the shore, in whole or part, for high moorlands, inland plateaux, or steppes—were derived.

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* Photographs of these (some five or six) to show their remarkable uniformity, would, I think, make a very instructive plate.—P. R. L.

On this factor, then, of coloration, characteristic of their downy chicks, and on this factor alone—if no others were available—it appears to me that the species of the group of Ringed-Plovers which we have been discussing, stand apart and are worthy of generic consideration.

"Without juggling with facts," we can easily recognise in it a very natural and compact group of Plovers, which is well differentiated in a variety of ways from any other group of true Plovers; and to lump it with these last—a very heterogeneous collection—seems to me to be not only quite an unscientific procedure but one which is devoid of any practical utility. It is surely a movement backwards towards the dark ages of our ornithological ignorance.

Finally, I should like to call attention to the much neglected study of the downy nestlings of the whole group of Waders—to say nothing of other groups. From the point of view of the phylogenetic relationships of the whole suborder of the Limicolæ, I am convinced that attention to this branch of study would be of the greatest possible service in reducing order out of what at present can only be called chaos; and on this point I hope to be able to offer some further observations in the near future.

XXIII.—*Notes on Molina's Pelican* (Pelecanus thagus).

By Henry O. Forbes, LL.D., M.B.O.U.

(Plate XIII.*)

Having been commissioned by the Peruvian Government to investigate certain questions relating to the birds inhabiting the Guano Islands of the Republic, I had opportunities of observing many of the species, chiefly marine, under unusually favourable circumstances, for a period of some eighteen months during 1912 and 1913. These islands extend at intervals along the coast of Peru between 6° 30′ and 17° 0′ South latitude, and are none of them situated more than a score of miles from the mainland. They are

* For explanation of the plate see p. 420.

all absolutely desert, and devoid of human inhabitants except at the guano-collecting season. Of the birds frequenting them the most important from an economic point of view are Molina's Pelican, Bougainville's Cormorant (*Phalacrocorax bougainvillii*), and two species of Gannet (*Sula variegata* and *S. nebouxii*). Their numbers are almost incredible, and these four species together cannot fall far, if any, short of one hundred millions. Each bird consumes at least ten pounds of fish daily, that is, they wrest from the sea a daily harvest of close on half a million tons of various kinds of its piscine inhabitants.

In studying Molina's Pelican—whose range is confined to the Pacific Coast of South America from about 3° 30′ to 37° 0′ S. lat.—I was at first much perplexed by the great variation presented by the colours of the irides, of the soft parts, and of the plumage of the neck and body. I could find little or no information in the various works I consulted to guide me in deciding whether these differently marked birds belonged to separate species or were only seasonal changes of the same species, and if the latter, in what order the various garbs succeeded each other and at what ages they were assumed. Under these circumstances, therefore, I have thought it may prove useful to place on record the following notes, recorded in the flesh, of the soft or fadable parts in the specimens I obtained.

The numbers which preface each record are those attached to the individual specimens in my collection, and the observations are copied from my daily journal written at the time. These specimens are all either in the British Museum (Natural History) or the Zoological Museum at Tring. I am still unable to make up my mind what is the exact plumage sequence, or how long each dress is retained; but with the assistance of the present notes, which refer to specimens collected in every month of the year except July and November, other ornithologists in Peru, who have the opportunity, especially my late private secretary and energetic assistant, who has now been appointed Warden of the islands, Señor Don Herbert Tweddle, may, I hope, be induced to make and publish further observations on the subject.

Description of the colours of the soft parts of examples of Pelecanus thagus.

No. 25. ♀.

Irides bluish black with pale yellowish outer ring. Upper mandible: culmen greenish blue; hook corneous, lateral bar yellow approaching orange. Lower mandible: ramus greenish blue, dorsal edge yellow. Pouch: ground-colour bluish with striations parallel to mandible of a deeper blue alternating with purplish red, its lower portion orange without the blue lines. Legs and feet lemon-green.

Neck black, no white along the edge of the pouch; breast pure white.

N. Chincha I., 16.2.12.

No. 39. ♀.

Irides dark brown; bare skin in front of eyes to nostril lavender-blue. Upper mandible: culmen and lateral bar yellow, corneous scales at base; culmen anteriorly corneous with lake lines through it; hook rich yellow; lateral bar anteriorly lake-red becoming rich orange at tip. Lower mandible: skin at base lavender-blue; rami with yellow corneous scales, passing into orange-red, and terminal hook orange. Gular pouch pale lavender-blue with pale lines along it parallel to lower mandible as far down as level of occiput; its lower portion very velvety sooty black without pale lines; very pale lavender patch parallel to neck and separated from the feathers by a black line.

N. Chincha I., 21.2.12.

No. 46. ♂.

Irides pale grey. Pouch: uniform greenish blue with dark blue margin underneath, parallel to the lower mandible. Legs and feet pale greenish blue.

Chincha Islands, 26.2.12.

No. 89. ♂.

Died in captivity.

Entire neck black; a few white tips to the feathers of the forehead.

Central Chincha I., 6.3.12.

No. 93. (Sex ?)

Irides rich greyish brown. Upper mandible: culmen pale green, tip orange; ventral margin rich rose colour. Lower mandible: purple dotted with yellow at base, then entirely yellow on the margins, merging into purplish rose, and tip rich orange. Pouch: striations parallel to the lower mandible and as low as the first vertebra, purple, becoming rich yellow, with the striations finer, about three-quarters of the way down; below level of first vertebra the striations, which become parallel to the neck, are also purple. In front of eye, and under it, the bare skin is pale blue.

Head and neck black.

Ancon, 21. 4. 12.

No. 149. ♂, no. 150. ♀, no. 151. ♀.

Irides dark brown with outer ring of pale yellow; skin between eye and beak pale lavender. Upper mandible: culmen greenish at base, becoming a pale yellow and having corneous scales anteriorly; hook orange; lateral bar with greenish scales at base, then lake-red, becoming orange under the hook. Lower mandible: posterior third with chalky corneous scales, bare skin at base lavender; ramus yellowish green with lavender-blue showing through at spots midway, purple merging into orange-red at the anterior end; dorsal margin lake-red extending further back than the purple, tip orange. Gular pouch: lines parallel to mandible, purple on yellowish under-colour; below level of occiput and parallel to neck the lines are grey on a black background.

Lobos de Tierra I., 21. 5. 12.

No. 154. ♀.

Agrees with above but varies in colour of the gular pouch which, parallel to the mandible, is striated with lavender-blue lines; coalescing and diverging narrow and broad bars upon background of pale yellow, becoming brighter anteriorly; parallel to throat the pouch is greyish yellow with reddish-brown lines. Legs and feet isabelline-yellow.

Breast pure white; head speckled with black.

Lobos de Tierra I., 24. 5. 12.

No. 180. ♀.

Irides brown with yellowish-grey outer ring. Upper mandible: culmen with corneous chalky scales and yellow under-colour; hook rich orange; lateral bar with bare skin at base lavender and with corneous yellow scales, becoming rich lake anteriorly, deeper towards tip. Lower mandible: skin at base lavender, with corneous orange scales on ramus, becoming orange-lake on dorsal and orange on ventral margin, tip rich orange. Gular pouch: has a sooty line separating ramus from pouch, in region beneath the mandible a greenish-grey basal colour with pale lavender lines parallel to the mandible; lower part of sac yellow and behind larynx grey, with indistinct yellow bar. Breast spotted.

Lobos de Tierra I., 1. 6. 12.

No. 181. ♀.

Irides brown with yellowish-grey outer ring. Upper mandible: culmen with corneous chalky scales and yellow under-colour; hook rich orange; lateral bar with bare skin lavender at base and with corneous yellow scales becoming rich lake anteriorly, deeper towards tip. Lower mandible: skin at base lavender, with corneous orange scales on ramus, becoming orange-lake on dorsal margin, orange on ventral margin, tip rich orange. Gular pouch, separated from mandible by a dark sooty bar, has in region parallel to mandible a basal colour of greenish grey lined with pale lavender; lower part of sac sooty barred with faintest yellow lines. Legs and feet greenish yellow, soles of feet greenish lavender.

Lobos de Tierra I., 1. 6. 12.

No. 223. ♀, no. 225. ♀.

Irides umber-brown; bare skin in front of eyes dark lavender. Upper mandible: culmen yellowish blue becoming purple towards the hook, which is dark orange; lateral bar, deep blue at base, where skin-covered; ramus covered with yellow chalky corneous scales for half its length, rest lake, longitudinal line bordering culmen green. Lower mandible: skin at base dark lavender; ramus bluish green, with patches of yellow chalky corneous scales, anterior two-thirds lake along the dorsal margin, centrally isabelline yellow, hook dark yellowish corneous. Gular sac: broad sooty bar underneath ramus for about half its length, below which for entire length of mandible a dark sooty-grey area with parallel lavender lines, bars and blotches; below this grey area and down to feathered region a sooty area with yellowish patches and lines; and parallel to neck, sooty lines ; a patch of very delicate lavender, lined longitudinally with yellow, borders the white feather-streak on the neck. Legs and feet dark dull lavender-blue.

Lobos de Tierra I., 23. 6. 12.

No. 224. ♀.

Irides umber-brown ; bare skin round, below, and behind the eye, dark purplish lavender. Upper mandible : culmen with a narrow line of blue at base, remainder rich bluish green ; hook faded yellow; warty blue line from division between culmen and lateral bar for about an inch toward eye; skin at base of lateral bar purplish lavender, anteriorly greenish yellow with whitish-yellow corneous scales, remainder deep lake to tip, hook deep orange. Lower mandible: bare skin at base deep purplish lavender, anteriorly yellowish green; basal one-third of dorsal margin orange, rich lake to tip; centrally, for half its length, orange-lake, merging into lake. Gular pouch as in nos. 223 and 225.

Lobos de Tierra I., 23. 6. 12.

No. 226. ♀. (Plate XIII. fig. 3.)

Irides umber-brown; bare skin around eye lavender. Upper mandible: culmen with yellowish-white corneous scales, remainder yellowish green, hook yellow; warty line between bases of culmen and lateral bar pale lavender, base of lateral bar pale lavender, anteriorly scaly and whitish yellow, remainder lake. Lower mandible: base with corneous scales, dark green. Gular pouch with sooty bar beneath mandibular ramus and from its base for about half its length; lines and bars parallel to mandible lavender upon a dark sooty-purple background ; those parallel to throat very indistinct yellowish upon a sooty-grey background; bar parallel to the white feather-streak, along the neck, purplish pink with paler reticulations. Legs and feet dark dull lavender-blue.

Crest with uppermost feathers white and lower black with white points; lower chest striped, abdomen and sides of body less so.

Lobos de Tierra I., 23. 6. 12.

No. 269. ♀.

Irides black. Bare skin round eyes lavender, that between the eyes and the upper mandible both above and below the orbits presenting jet-black caruneulations on a lavender background. Upper mandible: culmen greenish orange with incrustations of flaky corneous tissue; and just before rising on to the hook, it becomes white-streaked with black parallel lines; hook rich orange; lateral bar pale greenish yellow at base and along its dorsal margin, the remainder of the bar lake-red, deeper near the hook, and presenting thick flaky corneous incrustations posteriorly. Lower mandible: posteriorly lavender, centrally rich orange and deep orange lake-red, tip of its hook yellow. Pouch: having below the mandible very deep lavender-purple bars parallel to the mandible; below larynx, and posterior to mandible, sooty black; base of pouch sooty grey, continuing also along the base of the anterior part; widish lavender patch parallel to the neck along the posterior edge of pouch. Inside of mouth deep sea-green with orange lines on the palatal ridges, becoming rich lavender at entrance to the throat. Inside of pouch pale lavender. Legs and feet pale lavender.

Ancon, 16 9. 12.

No. 282. ♀.

Irides rich brown with outer ring of pale yellowish grey, skin around eye pale flesh-colour, that in front of eye and at base of mandible pale lavender with carunculations of same colour between the eyes and nostrils. Upper mandible: culmen with corneous scales greenish yellow; hook orange-yellow; lateral bar like culmen to about half its length, when it becomes orange-red on ventral margin. Lower mandible : skin at base pale lavender ; ramus orange-yellow, anterior third orange-lake scarlet. Gular pouch : bars parallel to ramus and nearer to it purple-grey, the rest brownish grey on a pale lavender background ; below level of occiput the bars disappear and the pouch is uniform greyish brown ; a broad purple streak runs parallel to neck alongside the feathers. Legs and feet lavender with slight tinge of green on metatarsus.

Neck grey behind.

Ancon, 19. 9. 12.

No. 285. ♀.

Colours of head, neck, and pouch exactly as in no. 269.

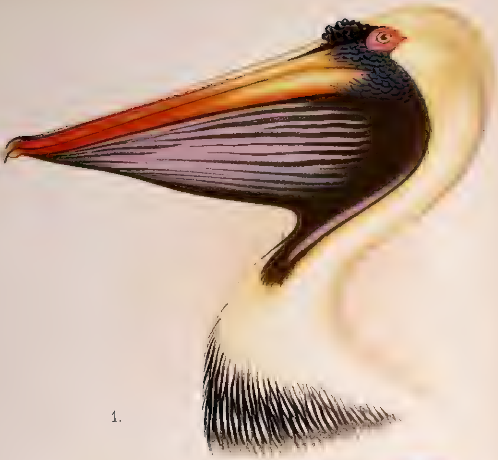
The head pale lemon-yellow, as also some of the crest-feathers ; the lemon-yellow traverses each side of the neck passing down to meet in front of the chest, leaving a white or less yellow area immediately below the pouch. Abdomen spotted. Legs and feet dirty lavender.

Ancon, 22. 9. 12.

No. 338. ♀. (Plate XIII. fig. 1.)

Irides straw colour ; skin round eye pink or carmine-pink ; caruneulations black and large between orbit and beak, but smaller on the bare skin at posterior end of both mandibles ; under the orbit and between it and the upper mandible they are fewer and the skin is bluish purple. Upper mandible : culmen chalky white, hook pale orange with a black spot in posterior convexity of the hook ; lateral bar yellowish chalky for one-fifth its length, then carmine-red, merging into carmine-orange towards the tip. Lower mandible orange chalky, then orange-carmine. Pouch : sooty black, the light bars parallel to the lower mandible rich pale bluish lavender, the lower ones somewhat paler ; the bars parallel to the neck are rich bluish lavender. Legs and feet dirty greenish blue.

Top of head pale yellow, which runs down the sides of the sooty-black pouch to meet beneath it, where it becomes paler. Neck pure white.



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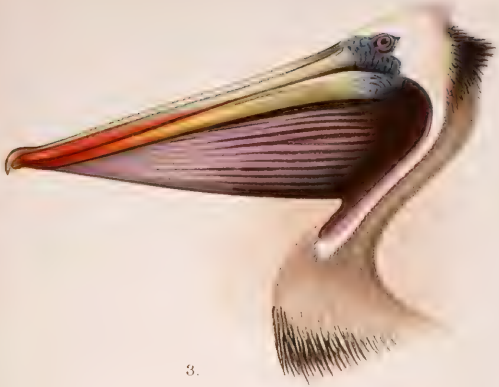

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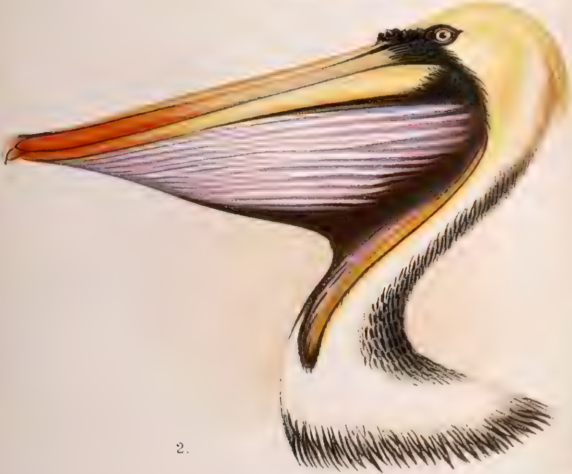

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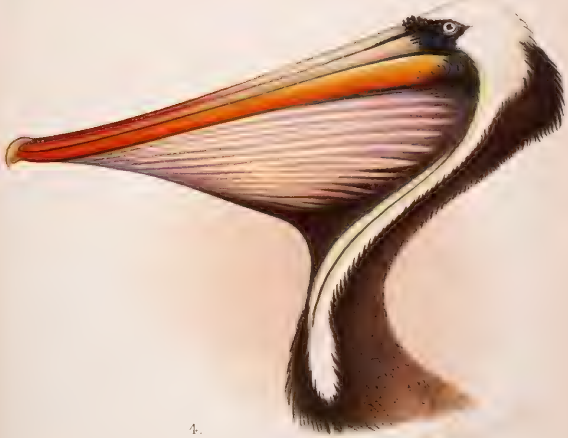

4.

West, Newman chr

PELECAN THAGUS

Stomach contained 3 fishes (2 Cabinsa and 1 Micho) weighing 1 lb. in weight.

Ofrenda Bay, near Ancon, 21. 10. 12.

No. 459. ♂. (Plate XIII. fig. 2.)

Irides pale grey; black caranculations at base of culmen, lateral bar, and lower mandible. Upper mandible: culmen yellowish-horn colour with dark mark posterior to hook; hook corneous yellow; lateral bar pale corneous, anterior third orange-red. Lower mandible bright yellowish white with chalky corneous scales, anteriorly orange-red; hook orange. Gular pouch with longitudinal patch of black under ramus, from angle of lower mandible forward having white and lavender lines parallel to ramus, deeper anteriorly and along raphe beneath, remainder of pouch deep black; parallel to throat and bordering the feathers several orange lines succeeded by others of lavender colour. Legs and feet dusky lavender.

An incubating bird.

Mid-Chincha I., 29. 12. 12.

No. 460. ♂.

Irides pale grey; no caruncalations; otherwise similar to no. 459, except that the lines on the transverse portion of the pouch are deeper lavender and intercalated with others very dark blue, almost black; the middle line along its base sooty black. The vertical portion of pouch, parallel to the neck, sooty black. Legs and feet dusky lavender.

Top of head white: no crest; breast and abdomen fully striped. An incubating bird.

Mid-Chincha I., 29. 12. 12.

No. 474. ♂, no. 475. ♂ (Plate XIII. fig. 4), no. 476. ♂.

Irides greyish white; caruncalations black. Upper mandible: bare skin at base black; posteriorly yellowish-horn colour with some corneous scales, anteriorly rich lake. Lower mandible with bare skin at base black, posteriorly rich orange, anteriorly rich orange-lake. Gular pouch:

lines on the transverse portion rich lavender ; those on the posterior aspect of the vertical portion rich cream-colour alternating with others bluish white, remainder of pouch velvety blue-black.

N. Chincha I., 2. 1. 13.

No. 501. ♂.

Irides yellowish brown ; bare skin in front of eye bluish purple. Upper mandible : culmen dark lavender, lateral bar lighter lavender posteriorly, anteriorly including hook pale yellow. Lower mandible : bare skin at base and posterior portion of ramus bluish purple, anteriorly pale yellow. Gular pouch pale cream-colour, with a streak of lavender underneath the mandible, and a deeper bar close and parallel to the feathered area of neck. Legs and feet white.

Canevaro Peninsula, Lobos de Tierra I., 22. 2. 13.

No. 502. ♂.

Irides purplish grey with outer lighter ring ; otherwise the same as 501, except that the yellow in that is replaced in this by orange.

Canevaro Peninsula, Lobos de Tierra I., 22. 2. 13.

No. 503. ♂.

Irides greyish yellow ; otherwise as in 501, except that the culmen is darker corneous.

Stomach contained 1 lb. 15¼ oz. of anchovitas (*Engraulis ringens*).

Canevaro Peninsula, Lobos de Tierra I., 22. 2. 13.

No. 519. ♀.

Irides light yellow ; bare skin around face and base of upper mandible pale lavender. Upper mandible : culmen dark corneous with anterior third isabelline yellow ; hook orange. Lower mandible entirely pale lavender. Gular pouch rich cream-colour with 'shagreened' surface on the lines and bars of pale lavender which traverse it. Legs and feet horny white, toes lavender.

Canevaro Peninsula, Lobos de Tierra I., 2.3.13.

No. 520. ♂.

Irides pale straw colour, otherwise the same as 519, except that the anterior portion of beak (not including the culmen) is pale green.

Canevaro Peninsula, Lobos de Tierra I., 2. 3. 13.

Molina, "one of the most pernicious blunderers who have brought confusion into natural history," as he has been described by a distinguished English botanist, was the first to introduce this Pelican to science as a new species in 1786 *, and he certainly made no pernicious blunder in his determination. *Pelecanus thagus* is an excellent species. The bird was for centuries prior to that date familiar to, and held in respect by, the Incas. On many of their ancient textiles it is represented devouring a fish, and Sir Clements Markham refers to Mr. Spence's description of "a series of plates, almost like a lady's muslin collar in size and shape, covered with figures. On one of these there were nearly a hundred figures of pelicans. Every figure represents the bird in a different attitude, and as they have been stamped, not engraved, a separate die must have been used for each figure."

Pelecanus thagus is met with along the whole coast of Peru at all periods of the year. It occurs also at certain seasons in the Guayaquil River, in Ecuador, where, I am informed, it may be seen roosting on the trees of that richly forested region, and as far south as Lota, in Chile, in 37° S. lat. So far as I was able to ascertain, however, it does not migrate, nor does it breed in either the northern or the southern extremes of its range. Fortunately for the Republic of Peru, it prefers to nest in the desert and arid islands owned by it, and but very occasionally on the sandy coast pampas of the mainland far from human habitations.

In January 1912, when I first visited the Chincha group of islands, lying between 13° and 14° S. latitude, I was witness to a very remarkable episode in the history of this (and some other) species of guano birds. I found there the whole of the breeding plateaux of the different islands dotted thick with nests of Pelicans and Cormorants, the vast majority of them still containing nestlings of different ages —to the number of some millions—but all of them dead, sun-baked mummies. It appeared that in the previous November, almost the entire avian population of the islands began suddenly, for some reason, so far not yet satisfactorily explained, to take their departure, leaving both eggs and young to their fate: some to die of hunger, others to be devoured, till disgust intervened upon satiety, by the Vultures, the Gulls, and the Terns. By December, 1911, hardly a score of birds remained, as was the case when I arrived in January, 1912; and none returned to nest till the end of that year. What took place at the Chincha Islands, occurred at almost every other breeding-station throughout the length of the Republic—a coast-line of nearly 1000 miles.

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* Molina, Hist. Nat. Chili, 1786, p. 212.

The Chincha and the Lobos groups contain perhaps the largest pelicaneries in Peru; but smaller colonies breed in almost all the islands. As early as June the ovaries of the females had begun to enlarge against the incubating season, which occurs in the spring of the southern hemisphere. By October, the pairing—which appears to be unobtrusive—has been accomplished, and the assembling together of the multitudinous couples in the usual nesting area on the pampa of the islands is in progress. At the Chinchas I found the nests of Molina's Pelican to begin as little more than hollow depressions, circumvallated with dry guano and dry sand, which latter the birds industriously scrape from the ground wherever it can be found, and loading it into their gular pouch, carry it laboriously to the chosen spot. Such feathers as can be picked up or stolen from their own kin or from the Cormorants are used as a lining. Later, each nest assumes much greater proportions through the uniform deposit around it of fresh guano from day to day, first by the parents and afterwards by them and the young conjointly.

The birds were busy nest-building about the beginning of

November, and towards the middle of the month I found eggs under most of them, but only a few had the full clutch of four. These are white in colour with a very chalky surface. Their size averages 83·7 × 55·7 mm.

Molina's Pelican sits crowded together in large colonies, very generally quite surrounded by still denser and more extensive colonies of *Phalacrocorax bougainvillii.* At this season the birds are extremely timid, and rarely allow the near approach of an intruder without taking wing with a recriminating "wauk," from their nest; in this respect they are unlike their incubating friendly neighbours, the Cormorants, which allow one to come comparatively close to them without leaving the nest. The flight of a parent Pelican from its nest is attended with disastrous results, for the Dominican Gulls and the Gallinazas (*Cathartes aura*), which are eternally on the watch, descend in an avalanche on the unprotected eggs or squabs, and before one can fully realize what is happening, the fond hopes of the parents are irretrievably dissipated.

The "klokken" birds occupy their patient hours of incubation in preening their feathers, ridding them of the very annoying *Mallophaga* with which they are infested. They have also a curious habit of every now and then elevating their beaks perpendicularly in the air, sometimes for the luxury of a cavernous yawn, sometimes to clapper their mandibles, while they vibrate nervously, like a loose sail, the flabby sides of their gular pouch. This Pelican's mature plumage is apparently not acquired before it attains the age of three, perhaps of four years. It would require a series of observations extending over half-a-dozen consecutive seasons to determine with certainty this interesting point. At all events, I am able to affirm that among the birds actually incubating on the Chincha Islands in November 1912 there were individuals in three quite different attires. The majority had the hind neck jet-black, while in others it was sooty grey and in a small number pure white.

Young birds began emerging from the egg towards the end of December. They are hatched in an absolutely callow condition, and are of a pale flesh-colour, thus differing markedly from those of the Brown Pelican (*P. fuscus*) which, according to Chapman, are livid black. Within a fortnight they are completely endowed with a short fine white down, which remains their garb for a period which I was unable to determine exactly. Their black feathers begin to appear on the wings, dorsum, and tail, a condition in which the nestlings are encountered wandering from their cradle, when they appear, if viewed from a little distance, to be pure white birds with black alar quills and a very conspicuous black cordate spot in the middle of the back. At this stage their irides are extraordinarily variable: no two are quite alike in this respect. The iris in youth would seem to be of a lighter or darker shade of yellow, and at a more advanced age it varies from grey to very dark brown. The above-mentioned black and white phase was the garb in which I found the immature Pelicans when I reached the Lobos group (6° 30′ S. lat.) in February 1913. The young birds had then all vacated the nesting area and had waddled their way over very uneven ground to the little beaches and rocks by the sea-margin on which they pottered about the livelong day, on the alert for the return of their parents from the sea with supplies. When I left the islands in the middle of March, they were still little changed in plumage, and were still being fed by their parents in the extraordinary manner which, as is well known, the Steganopodes practise. Well known as it is, it is always most interesting to a naturalist to be spectator of these curious habits, for the first time especially. The young ones, often two or three at once, sometimes all own brothers and sisters, sometimes in part or even all of them neighbours and aliens in blood, insert their entire head into the gaping mouth of the returned food-bringer, which has to prostrate itself on its belly to allow the freest access to her (or his) capacious store-chamber. The young birds hold very lightly to their repast, for on the slightest alarm they eject it in order to lighten their bodies for escape, which, as they cannot fly, can only be at a goose-step pace. The wonderful ease with which they can perform this ejaculatory operation is taken advantage of not only by the Gulls and Terns, which mercilessly bully the hapless and helpless innocents, and so fare sumptuously during the season of these birds' infancy, but by the fishermen in need of bait, who, taking a lesson from the sea-fowls, waylay the old birds on their arrival at dusk and, by scaring them, often secure from a single individual the best part of a bucketful. I have been told that 8 lbs. of fish is not an uncommon quantity to be ejected by a bird that has been out on only a short fishing excursion.

At what age and in what plumage the young Pelicans fare forth to the sea "on their own," I am unable to state from personal obervation. It seems probable that they do not take to the water till some time after they are able to fly. It seems also that the white down stage is replaced by pure white feathers on the head and neck, in association with a pure white under-surface. The youngest flying birds, or what seem to be so, which I examined were in this plumage. In the next stage, assumed probably the year following their birth, or even the year after that, the white neck is replaced by a sooty-grey one and a partially striped under-surface; and this garb again, but at what age I am unable to state, by the deep black hind neck with a white margin to the yellow-bordered gular sac, and a fully-striped abdominal region; this cannot be assumed before the bird's third year at earliest, but it may be donned later. The specimen (No. 475, Pl. XIII. fig. 4), which I consider to be in fullest nuptial plumage, does not possess so fully-developed a crest, nor has it the same amount of yellow on the neck as one (No. 459, Pl. XIII. fig. 2) which seems to me to be a younger bird, though both were captured during the same incubation period and on the same nesting area. The accompanying plate represents the head and neck of four individuals in the order of what I believe to be their ages.

In April and May the parents certainly, and doubtless many of the young, disperse widely along the coast, although the islands are at no time anything like denuded of Pelicans. They frequent the shores of this stormless region and are to be seen riding sedately, and less timidly than when on their nests, in the smooth water just outside the line of breakers, feeding on the life to be obtained on the bottom within reach of the point of their long mandibles. In searching for its food on the wing, Molina's Pelican flies heavily and slowly with its head as much to wind as possible, at about forty to fifty feet above the water, throbbing its tail and treading the air with its legs. At the end of its beat, it wheels about quickly, descends the wind and again returns, plodding slowly up against the breeze. On sighting its quarry, the bird suddenly drops its head perpendicularly seaward, as if it were fixing its prey with its eyes; it "backs water" and simultaneously descends through the air by a few rapid strokes of its wings and plunges headlong, or falls as it appears to the observer, into the water, striking it awkwardly and with a heavy splash, almost turning a somersault, which it would execute, where the water is deep enough, I believe, were it not for its wings arresting its submersion, for this species at any rate does not fold them against its chest like the Gannets, but cuts the water when they are still half extended; and it very rarely immerses itself entirely as the European species does. When it has secured its prey, the Pelican rights itself on the water, but has generally to delay several minutes in properly disposing of the contents of its gular pouch before taking wing again. Its manœuvres, after a rather successful haul out of a dense shoal of anchovitas, when sometimes it captures enough to weigh down its pouch for a foot to a foot and a half, are ungainly. It tosses aloft its huge beak fully agape, shaking its head from side to side to tumble its contents throatwards. To get them properly arranged seems always an awkward and difficult task, and it has often to discharge the whole bagful out on the sea again and re-pick them up, or at least what, if it does not look very lively, the "Modest" (*Larus modestus*) and the Dominican (*L. dominicanus*) Gulls —those expert and accomplished sea-roving marauders— leave it, and they rarely miss a chance. One often wonders whether the Pelican would not be better off without such mandibular and gular organs as it possesses. In comparison with the nimble, acrobatic, and splendidly adapted Gannet, the Pelican appears a clumsy bird. Its aerial displays, however, by their grace and achievement, recover for it any prestige lost in the ungainly manner of its feeding. Molina's Pelican will often—if not habitually—continue its aerial search for food till so long after dusk that it is difficult to follow its movements, diving five or six times in as many minutes and rarely being unsuccessful. After they have at last roosted—and the decision where they can spend the night most comfortably takes a long time to arrive at, for they will try half-a-dozen spots before settling finally—they will frequently, on either observing a commotion of the sea surface, or catching some signal understanded of them that a shoal of fish is in the vicinity, hurriedly sally out again in a throng and vigorously fall upon it. Their great bodies, magnified in the half-light, against the long-lasting clear belt of light athwart the western horizon, look like so many untidy sacks hurtling through the air into the sea. When at last "Little Mary" reports that sufficient has been laid in against the night, the birds flap their majestic way home again, in long files ; or they may change their mind, and bear away to some distant island or rock to spend the night free from "alarums," or danger to their repletion.

Molina's Pelican is a good bit of a sneak also. Often it may be seen buoyantly riding, apparently asleep, on the water near the shore, till perhaps a "Cuervo de Mar" (*Phalacrocorax vigua*) unexpectedly pops up within sight of it, from under the surface, with a captured eel in its beak. The "alcatraz" is instantly alert, and by the "crow's" side in a few moments, and if the latter has not got a completely manageable hold—often the case—on its slippery prey, the former will snatch it from its neighbour's mouth and dispose of it instantly and comfortably in its capacious carpet-bag. By such mean manners the Pelican obtains quite a deal of its supplies—or at least a considerable unearned increment to them.

After all, Molina's Pelican is a splendid and attractive bird whose disappearance, if civilization and cultivation should eventually ruthlessly cause its extinction, would be a lamentable loss to ornithology.

EXPLANATION OF PLATE XIII.

Heads of *Pelecanus thagus.*

Fig. 1. Female, Ofrenda Bay, Ancon. 21. x. 12.
Fig. 2. Male from Mid-Chincha Island. 29. xii. 12.
Fig. 3. Female from Lobos de Tierra Island. 23. vi. 12.
Fig. 4. Male from North Chincha Island. 2. i. 13.

XXIV.—*On a Peculiarity in the Nest of the Tasmanian Tit* (Acanthiza diemenensis). By H. Stuart Dove, M.R.A.O.U.

(Plate XIV.*)

John Burroughs, the veteran naturalist of North America, in his 'Ways of Nature,' has the following remarks concerning birds and their use of string as a nesting material:—"Who ever saw any of our common birds display any sense or judgment in the handling of strings? Strings are a comparatively new thing with birds; they are not a natural product, and, as a matter of course, birds blunder in handling them. The Oriole (*Icterus galbula*) uses them the most successfully, *often attaching her pensile nest to the branch* by *their aid*. But she uses them in a blind, childish way, winding them round and round the branch, often getting them looped over a twig or hopelessly tangled, and now and then hanging herself with them, as is the case with other birds.

"I have seen a photograph of an Oriole's nest that had a string carried round a branch apparently a foot or more away, and then brought back and the end woven into the nest. It was given as a sample of a well-guyed nest, the discoverer no doubt looking upon it as proof of an Oriole's forethought in providing against winds and storms. I have seen an Oriole's nest with a string carried around a leaf, and another with a long looped string hanging free. All such cases simply show that the bird was not master of her material; the trailing string is caught over the leaf or branch, and both ends drawn in and fastened regardless of what happened. Twice I have seen Cedar-birds (*Ampelis cedrorum*) trying to carry away the strings which Orioles had attached to the branches: instead of making any effort to untie or unsnarl them in a human way, they simply tugged at them, bringing their weight to bear, and tried to fly away with the loose end."—Burroughs, 'Ways of Nature,' 1906, p. 246.

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* For explanation of the plate see p. 422.

Since coming to my present residence, between the Mersey and Den Rivers, in north-west Tasmania, I have come across an instance in which a very considerable use of string has been made by the native Tit (*Acanthiza diemenensis*). There is a small Stringybark (*Eucalyptus obliqua*) growing near the back of the cottage, and from a horizontal branch of this tree depend some long pendulous branchlets, much after the style of the drooping White Gum branchlets (*Eucalyptus viminalis*) so plentiful on this coast. Amid the thick foliage of one of these branchlets, and about eight feet from the ground, was placed the nest in question, a small domed structure 4½ inches long by 3 inches across, with an opening near the top which will just comfortably admit one's forefinger. Dry grass and fine fibres are the principal materials employed, with here and there a spider's cocoon or dry leaf stuck on the exterior. But the remarkable point about the structure is the way in which string has been copiously employed, wound in and out among the other material, and even brought round from the back and drawn right across the front, so as to brace the nest in a masterly manner. There is no evidence here of a blind, unreasoning effort, a want of mastery over a new material; either birds have progressed in knowledge of the odds and ends of civilization, or our *Acanthiza* possesses sharper wits than the American *Icterus*. The string is even brought right through the back of the nest to the interior, so as to form part of the lining, the remainder of the lining consisting of a soft woolly substance resembling cotton-wool.

But the ingenuity of our little architects was not yet exhausted. A long piece of fairly stout white string was given a turn over a slender twig, then three or four turns over a projection (which carried two seed-vessels) from the twig, then both ends were carried down and woven into the dome, so that the nest was actually swinging by the string from the branchlet above, although also receiving some slight support from leafy twigs underneath, to which it was not in any way attached.

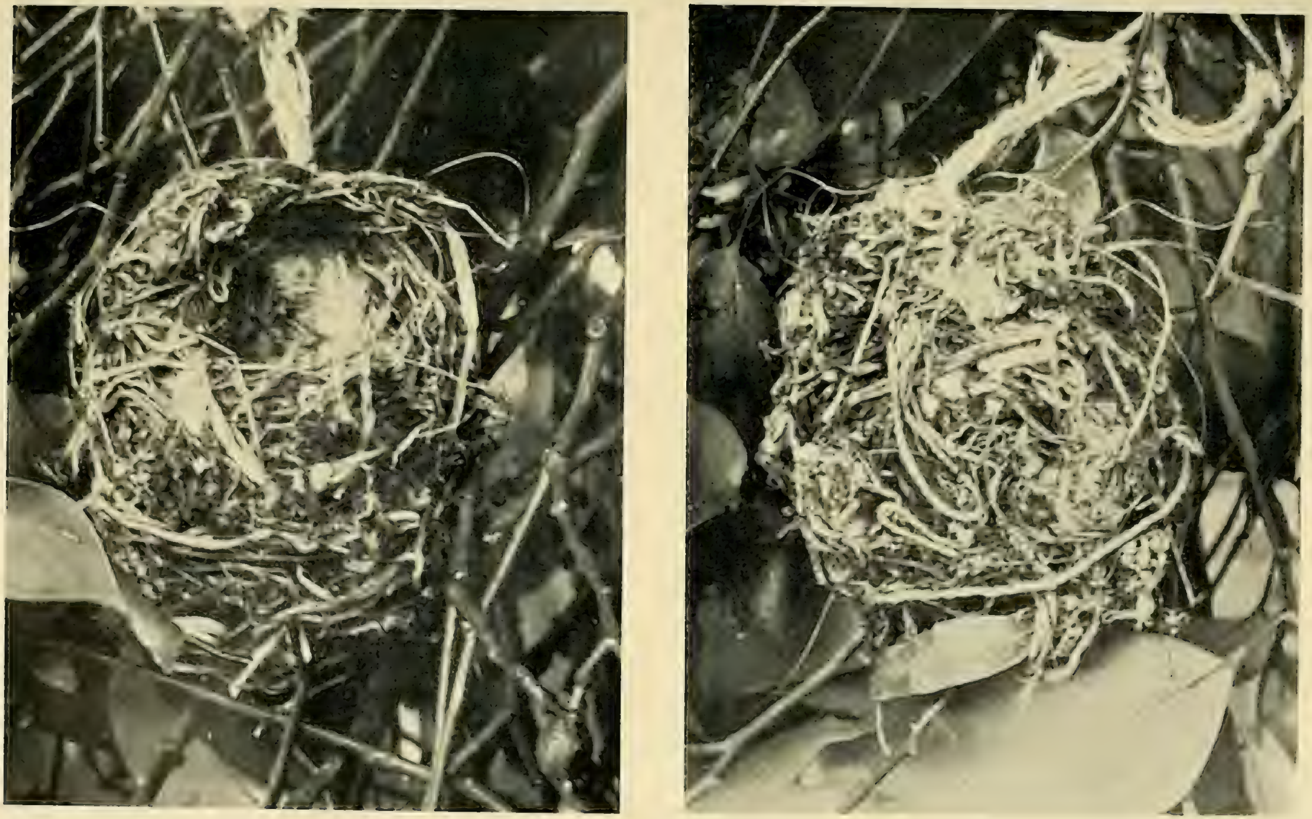
While in the forests of East Gippsland, Victoria, a friend and myself obtained the nest of a Tit, probably the Striated (*Acanthiza lineata*), which was swung in the same way from a branchlet, but in this case was made from fine strips or shreds of Stringybark, and the loop by which it was suspended was of the same material. Dr. Ramsay says that it is usual for *A. lineata* to suspend its nest by the top to a thin twig at the end of some leafy bough, also that many of the nests are ornamented on the exterior with pieces of paper, bark, or green or white spider-cocoons. In the case of our Tasmanian Tit, noted above, it will be seen that there are certain similarities between that particular nest and those of the mainland *A. lineata*, viz., the suspension from a branchlet and the decoration with spider-cocoons. It is, however, from my experience, very unusual for the Tasmanian Tit to suspend its nest; I can recollect one other instance when I first came to the island, the finding of an *Acanthiza*'s dwelling suspended to the underside of a dry drooping frond of the Fern Tree in Table Cape forests.

EXPLANATION OF PLATE XIV.

Nest of *Acanthiza diemenensis*.

Fig. 1. Front view. Bound with string and suspended by the same material from branchlet of Stringybark (*Eucalyptus obliqua*) at West Devonport, Tasmania.

Fig. 2. Back view, showing the string used in the structure.



1 NEST OF TASMANIAN TIT. 2

Photos M. Brown.

XXV. *The Surface Breeding Petrels of the Kermadec Group.*

By Tom Iredale, M.B.O.U.

(Plate XV.)

Systematic workers have long considered these birds a fair theme for discussion, and the present paper was prepared some time ago as an attempt to dispose of theoretical propositions by means of practical experience.

I have summarised my conclusions in two Antipodean journals, but these do not commonly fall under the eye of British ornithologists, who in many cases have not only difficulty of access to such, but have not the inclination to study the work of Antipodean strugglers. For, deprived of much literature and served with scant material, Antipodean students make a brilliant show when their work comes to be compared with that of their more favoured and better situated brother scientific workers on this side of the globe.

So many of my friends are still ignorant of the position of the Kermadecs, that I consider it necessary to once more outline the position and extent of these Islands.

The main and only habitable island, known as Sunday Island (or Raoul Island), is situated on the 180th meridian of longitude and about 28° South latitude. That is, it is the furthest point east or west of Greenwich it is possible to get. The reason for this statement will be shown later on.

The island is simply the rim of a volcanic crater, which varies in height from 200 feet to 1700 feet, averaging over 1000 feet. Its area is upwards of 7000 acres, and it is densely bush-clad and a mass of gullies and ravines. Three quarters of a mile distant from the north-east corner lies a group of islets of which the chief is Meyer Island. This is a double-humped rocky isle, only about forty acres in extent and rising about 400 feet. It is quite necessary to detail the location of Meyer Island, as this islet enters largely into the history of these petrels, and inaccurate statements have been circulated concerning it by authors devoid of local knowledge.

John Macgillivray was the first naturalist to make reference to these birds, and though his collection was made on Meyer Island, the birds were labelled Raoul Island. The reasons were that the former islet was unnamed, the name being given by Macgillivray's companions, and no suggestion of complications could have occurred to him as he only met with birds on that islet.

Before proceeding further it had better be stated that we have here an extraordinary case of similar or identical birds breeding at different times of the year on closely adjoining areas without any observed differentiation.

Thus, from August to May, Sunday Island was frequented by birds: the number was estimated very roughly at about half a million individuals. Meyer Island was not at first occupied by such Petrels, but about January a colony came and settled, and laying eggs in the end of February and March, their young took to flight in August. A rough calculation gave about six thousand pairs. Two noticeable features of the Meyer Island colony may be glanced at. Owing to the small size of the island, the birds were much more crowded, and consequently, available space being limited, they came to earth more regularly, and the length of the breeding season was shortened. Thus whilst on Sunday Island the first birds were observed in the last days of July, and their numbers increased during August, no eggs were laid until the middle of October. The latest bird seen sitting on an unhatched egg was on February 9; the first young absolutely ready for flight was observed on the last day of March, and all the young had flown before the end of May. This gives a period of ten months during which these birds were about the Island, whilst it would show a period of about five months from the date of laying until the young bird flies.

Now this same time must be occupied by the birds on Meyer Island, but here observations were limited owing to the impracticability of landing on the islet by reason of the weather. However, on February 29, that island was crowded with settled birds, and about one in every five birds seen was sitting on its egg. Towards the end of April every bird had either an egg or a chick, though many eggs were freshly laid. At the end of May all the eggs were hatched and many big downy young were observed. At the beginning of August almost all the young birds had flown. By the middle of November there were no signs of these birds about Meyer Island Four months would here seem to elapse between the date of laying and the flight of the young, and we were unable to make a satisfactory explanation of this at that time.

To revert now to my previous paragraph, I would explain that in addition to this erratic breeding performance on the part of these Petrels, a great variation in the coloration of the birds has been observed. The variation was first mentioned by John Macgillivray, and from a note in the 'Zoologist,' 1860, p. 7134, it is gleaned that he was inclined to the view that the difference in coloration was due to immaturity, though all the birds were breeding. Salvin discussed this variation when he obtained examples of *Œstrelata arminjoniana* from South Trinidad Island, Atlantic Ocean, and at first considered the differences specific, though he afterwards retracted that view.

From Macgillivray's time until 1887 no one appears to have visited Sunday Island save Dr. Graeffe, who in the interests of the Godeffroy Museum, made collections there. Little interest, however, seems to have been evinced by him in these birds.

In 1887 the Group was annexed to New Zealand,,and the Government vessel sent there, carried Mr. T. F. Cheeseman, of the Auckland Museum. Though more interested in Botany, he made numerous notes on the bird-life of the group, and obtained the assistance of the settlers on the island in furthering his investigations into the Petrels there. The extraordinary tales which accompanied the receipt of specimens by Buller and Hutton, through Cheeseman's intervention, produced some remarkable results. It is necessary to review these results, as it was due to the confliction of the very diverse accounts that an attempt was made to produce reconciliation.

Cheeseman's first account gives three species as surface breeders :—

Œstrelata mollis Gld., on Buller's identification, was the name of the "Mutton Bird" which bred during the summer (October to May) on Sunday Island.

Œstrelata sp. was used for the Meyer Island winter-breeding (March to August) bird. Cheeseman observed that these birds seemed to him inseparable from the Sunday Island bird.

Œstrelata neglecta Schl.? was included as being on record from the Kermadecs, and because he had notes which might refer to this species.

Buller about the same time drew attention to the fact that this Petrel was dimorphic in coloration, both dark-coloured and light-coloured birds occurring and breeding together. He, however, used for the bird the incorrect name *Œstrelata mollis* Gould.

Hutton then, having received a collection of Petrels from Cheeseman, contributed to the Proceedings of the Zoological Society of London, 1893, a paper theorising as to the observed variation. That paper is somewhat misleading as the labelling of the birds was incompletely and inaccurately done, and misled by these labels and furnished with paltry data, incorrect deductions were arrived at.

Therein three species and one variety were maintained. Thus on p. 752 *Œstrelata leucophrys* was proposed as a new species for a very light white-headed form from Sunday Island.

Œstrelata neglecta Schlegel, p. 752, was given as the correct name for the bird identified by Buller as *Œ. mollis* Gould. Though the birds were labelled Sunday Island, Hutton states that Cheeseman informed him that this was the winter Mutton Bird of Meyer Island. Included also was a nestling labelled "Sunday Island, Nov. 1890." The description shows that either the labelling was done when the steamer lay at anchor at Sunday Island, or else when the birds arrived at Auckland. For no such bird could have been procured either on Sunday Island or on Meyer Island in the month of November.

Œstrelata neglecta variety, p. 754, is used for a specimen, which Hutton decided must be the Summer Mutton Bird breeding on Sunday Island. Further, on p. 755, *Œstrelata phillipi* Gray was used for a uniformly coloured dark bird which Hutton considered distinct, though all the birds were sent together with no differential notes by the collector on the Island.

The suggestions made by Hutton to account for the variation I will deal with at the end of this paper. Buller at once declared that *Œ. leucophrys* Hutton was only a form of *Œ. neglecta* Schlegel, which he accepted as the correct name of the species; while he stated that he had proposed to describe the very dark birds Hutton called *Œ. phillipi* Gray, but that Salvin had dissuaded him; Salvin's view being that the very light as well as the uniform dark birds were only colour variations of one very variable species.

Not satisfied, Hutton endeavoured to obtain information regarding the habits of these birds. In a letter to Buller (Oct. 7, 1902), he communicated his results.

White Titi (*Œ. neglecta*) commences to breed early in November; inland, on ridges: young covered with white down.

Black Titi (*Œ. phillipi*) commences to breed late in November; on the coast, on the edges of cliffs: young covered with greyish down.

Hutton had no further information concerning *Œ. leucophrys,* but assumed that it might have different habits and hence should be treated as a variety or incipient species. Later he contended that the Winter Mutton Birds were *Œ. leucophrys* Hutton.

Buller in his Supplement, notwithstanding his apparent acceptance of Hutton's views, included three species as surface-breeding at the Kermadecs:—*Œ. mollis* Gould, *Œ. neglecta* Schlegel, and *Œ. phillipi* Gray. The first is included though no new evidence is produced in its favour, and though Buller himself had accepted Hutton's correction of his error; to the second *Œ. leucophrys* is ranked as a synonym, and under the species name Hutton's diverse opinions are quoted without comment: whilst the last-named is included on Hutton's proposition of it in 1893, though Buller then opposed it and Hutton had since withdrawn his idea of the specific distinction of the form, and Buller had printed that retraction.

Such was the state of our knowledge of these Petrels in 1907, when an Expedition was organised in New Zealand to investigate the Biology and Geology of the Group. As the Kermadecs are completely isolated, being 600 miles from the nearest land-point and communication is effected only once a year, it was necessary to provide for such a long stay. The length of time was considered peculiarly adapted to the solution of the problems surrounding these birds. As a matter of fact, ten months only were spent on the island, and consequently some of the more interesting results as to breeding habits were not fully realised.

I landed on Sunday Island (Plate XV.) on the 31st of December, 1907, and left on the 10th of November, 1908.

Upon my arrival at the island, the first attraction was the multitude of birds encircling the tops of the trees in every direction. As night fell the noise increased, though it was not so noticeable on the beach owing to the clamour of the Wideawakes (*Onychoprion fuscatus serratus* Wagler). The first evening a tent was struck almost upon the open beach, and just after dark a Mutton Bird made a plaintive appeal against our intrusion. At sunrise next morning it was discovered sitting on its egg within six feet of the tent entrance. Curiously enough, it was a uniform dark bird (*Œ. phillipi* Hutton), which according to theory should not have been there. A few days later a tour was made of the island and copious notes were taken. Though many had hatched young, the majority were sitting on eggs; they were observed on the ground in every situation *but none* in burrows. The bulk had to be content with the shelter of the fern alone, though every shelter was taken possession of. Many were

1. General View of Sunday Island.

2. Meyer Island seen from Sunday Island.

right out in the open, and in some rare instances exposed to the sun. The birds were very gentle and allowed themselves to be handled without protest, whereas the large downy young strongly objected. While camping out in the bush, the non-sitting birds were observed to come flying in at sunset, and before settling, to circle about a single spot, calling all the time as if to let their mates know that they were coming. Soon after dark all became quiet, save now and then one broke the silence as if enquiring for its mate. Early in the morning, just before sunrise, the birds which had not to sit would leave again for the day.

The result of our investigations was the rejection of every theory of incipient species, or varieties, in connection with the Sunday Island bird. Every degree of coloration was met with in every location, and there seemed no means of distinguishing any forms. Hutton's information proved to have been unreliable, as there were no inland ridges which could be differentiated from coastal cliffs: both terms were inaccurate and misleading. There was a variation in the colour of the down from pure white to dark grey, but it was not constant and could not be utilised to separate any forms. For the next three months every bird that gave any indication of abnormality was handled and examined. In conversation, I have stated that I had handled thousands of these birds, and I have been scoffed at, yet it is absolutely the truth.

The fully grown immature birds form the staple diet of the islanders, and we had to depend upon them for our meat supply. They were collected in the first three weeks of April, and between 2000 and 3000 were preserved. When these were being collected, I paid special attention to the matter of variation, and the numbers taken were recorded. A not uncommon occurrence was the finding of abnormal specimens due to improper feeding. In many cases two birds sitting close together would become antagonistic, and one mother bird would drive the other one away at every opportunity, so that the young of the latter would obtain just sufficient food to keep it alive and be noticeably reduced in every way. These starvelings were dwarfed structurally, and I cannot think that they would ever reach the normal size. It is possible that their systems would be so weakened that they could not survive the first winter's struggle at sea. In other cases it was noted that specimens seemed to have developed strongly and were bigger birds. Indeed, the bills of some of these young giants recalled those of *Pterodroma macroptera gouldi* (Hutton).

I was now convinced that it was impossible to indicate any incipient species on the main island, but realising the doubting view of the systematic ornithologist, I resolved to attempt to make assurance doubly sure.

In the spring, just after the birds had settled, I devoted three days to a tour of the island with the sole object of getting reliable data with regard to the variation. Mr. Sidney Oliver accompanied me, and we walked right round the island. The route extended some miles, and every altitude was included, rising from the flat to 1200 feet and falling again to sea-level: then, following the crater rim, it rose to 1700 feet, the highest point of the island, and then descended to the commencing place. So that no prejudice should enter into this examination, *every* bird adjacent to the track was handled, the coloration of the head, breast, belly, and legs written down. It should be noted that the word track as here used does not mean a beaten road, but simply a direction through a virgin bush. Throughout the journey every little variation was carefully noted, but nothing was found whereby forms could be separated.

On the other hand, the observed variation was found to be so great that we could not definitely match two birds. The darkest birds were almost black above and below, with uniformly black legs and feet; the next stage would be dark blackish-grey birds with dark legs and feet: *many dark birds would have "sandalled" or "light legs"* (the reason for these italics will be shown later on): then there would be dark birds, with the belly white or nearly so: these and all the light forms had generally "light legs," but *some light birds were found with uniform dark legs and feet.* Birds in which the grey of the head and neck was mixed with white, but still with greyish throats, were common, but the birds in which the grey had almost vanished were infrequent. Every combination of coloration was noted and, at whatever elevation the birds were found the variation was the same. Sometimes the lightest birds would seem to be the most numerous, but then a number of dark ones would turn up. When sitting, the length of the wings was noticeably variable: in some birds the folded wings would extend beyond the tail, whilst in others they would not reach to the end of the tail. But upon measurement the wings of the birds were seen to be of the same length. This is noted, as Hutton used this character as seen in dried skins to separate some of his forms.

I have used, to designate the coloration of these birds, the comparatives light and dark only: owing to the wonderful range of coloration it was difficult to assign many of these birds to even these main divisions. The dark birds varied among themselves quite as much as the light ones: two very dark birds have been noted sitting together, when the contrast of colours was clearly observed. The general appearance of the newly settled birds was such that black and grey would be used to describe them, but brown was also commonly present. At the end of the breeding season russet was abundant in the old birds, the young showing more black and grey: this suggested that the brown birds would moult black or grey, but probably all do not. A newly settled bird was seen on October 18 whose scheme of coloration was decidedly reddish brown. The head and breast were light grey with a delightful russet sheen, which was vivid on the brown back and wings. Later, other newly settled birds with a reddish-brown scheme were not unusual.

The tabulation of the observations made on the three days' tour give the following results:—

Birds examined	264
Light head and throat, white belly, light legs ..	52
Dark head and throat, white belly, light legs ..	64
Dark head and throat, dark belly, light legs ..	23
Dark head and throat, dark belly, dark legs	41

Black head and throat, black belly, black legs..	30
Very light head, lighter throat, white belly, light legs	44
Light head and throat, white belly, dark legs ..	5
Black head and throat, black belly, light legs ..	4
Pure white head, throat and belly, light legs ..	1

A consideration of these would make the birds fall into three classes—dark, light, and medium; moreover, 102 would be called light, 98 dark, and 64 medium. That is practically 40 per cent. are dark, 40 per cent. light, and 20 per cent. medium. Such figures seem to prove that no differentiation can be made in view of these results.

Included in the 264 birds were 35 pairs; these last consisted of two birds nesting together and obviously mated; in sixteen cases odd birds were seen together, and in nineteen cases similar birds were coupled. In only two cases were a very light bird and a very dark one paired, and in no case were two very light birds observed mated, and in only one case were two black birds together. Such results again confirm the impossibility of suggesting incipient forms as recognisable.

Hutton gave different times for the beginning of the breeding season. The first eggs were carefully noted and the coloration of the sitting bird taken. Out of the first eighteen met with all over the island four were dark, four were light, and ten were medium.

Whilst making these notes, careful attention was given to locality, but though a few individuals together seemed to show a similar style of coloration, such patches were of little extent and rare occurrence.

I can only conclude that on Sunday Island the birds, whatever their coloration or habits, belong to one species. There were no varieties or incipient species that could be differentiated by dissimilar habits or nesting places.

The Meyer Islands (Plate XV. fig. 2), through stress of weather, could not be examined so thoroughly as Sunday Island, but the birds there were subjected to a severe criticism and variation was found to be rampant. At first less variation than had been observed on Sunday Island was suggested, but this I believe was due to the smaller number of birds examined. Every style and combination of coloration was noted, but the extremes were much rarer. I could find no detail whereby the Meyer Island birds could be separated from those of Sunday Island. It may be recorded that previously every investigator, Hutton, Buller, and Salvin, had all failed, from examination of skins, to indicate any separable characters. *I am therefore compelled, for the present, to refer to the Meyer Island breeding bird as a variety of* Œstrelata neglecta *Schlegel.*

These conclusions had been anticipated by Godman in the 'Monograph of the Petrels,' which, published whilst I was upon the Kermadecs, included all the forms Hutton and Buller had separated under the species name *Œstrelata neglecta* Schlegel. That this was due more to chance than anything else is shown by the synonymy utilised and the vernacular name chosen. Thus, *Procellaria phillipii* Gray is given as a synonym, though anterior to Schlegel's *neglecta*, whilst the vernacular name used is Phillip's Fulmar. As a matter of fact, *P. phillipii* Gray has nothing to do with this species, and the name Phillip's Fulmar must be rejected. Hartert, Jourdain, Ticehurst, and Witherby in their 'Hand-list of British Birds,' 1912, p. 154, use the vernacular Schlegel's Petrel, whilst a footnote reads "The name *Procellaria phillipii* Gray, 'Ibis,' 1862, p. 246, based on the plate in Phillip, *Voyage to Botany Bay*, must remain doubtful until we know which kind of *Pterodroma* breeds on Phillip Island. As this name is not accepted, the English name 'Phillip's Fulmar,' used by Godman (*Mon. Petrels*, p. 226), cannot be recommended.—E. H."

However, the use of Schlegel's Petrel should not be maintained, as in the 'Monograph of Petrels' that name was made use of in connection with the *Œstrelata incerta* Schlegel. I had shown the true value of *P. phillipii* Gray in connection with this bird in the Proc. Linn. Soc. N.S.W. vol. xxxv. 1911, p. 780, and Mathews has completed the task by accurately determining that species (Birds Austr.

vol. ii. 1912, p. 141 *et seq.*). Phillip Island, in the note by Dr. Hartert above quoted, is simply a penslip for Norfolk Island.

Mathews and I ('Ibis,' 1913, p. 232) used as the English name "Kermadec Islands' Petrel," and this is certainly preferable to the twice-used "Schlegel's Petrel."

In the 'Hand-list of British Birds,' as above noted, *Pterodroma neglecta* is admitted to the British List upon the strength of an occurrence of a bird found dead near Tarporley, Cheshire, April 1, 1908. Upon the same page *Pterodroma brevipes* Peale is also included, as a bird so identified was shot near Aberystwyth, Wales, in November or December 1889.

Neither of these two birds should figure in the British List as genuine wanderers to these shores. The first-named, at my suggestion, has been re-examined and declared to be an authentic Kermadec specimen by Mr. W. R. Ogilvie-Grant of the British Museum. Though my own acquaintanceship with the Kermadec species is, as I have shown above, probably better than Mr. Grant's, I bow to his superior knowledge in the handling of bird-skins, and would therefore point out that it would be best, even if it be a Kermadec bird, to enter it in a footnote. Upon p. 155 of the 'Hand-list' Messrs. Hartert, Jourdain, Ticehurst, and Witherby write regarding *Daption capense*, which they do not admit to be a British Bird :—"Examples of this species, an inhabitant of the southern seas, have been recorded from the Dovey 1879, near Dublin 1881, and near Bournemouth in 1894, but former writers have excluded them as not being genuine wanderers with some reason."

The extraordinary illogical argument that would admit *Œstrelāta neglecta* Schlegel to the British List and reject *Daption capense* Linné I cannot uphold. The former has not yet been recorded from Australia or New Zealand, yet it can arrive exactly half-way round the world in order to be admitted to the British List. Whilst, though *Daption capense* Linné has only to fly up the Atlantic Ocean, it must be rejected as unable to do so. Yet the powers of flight in the two species are exactly the converse, the *Daption* being a powerful seagoing bird, whilst the *Œstrelata* is hardly a wanderer at all.

The bird identified as *Pterodroma brevipes* Peale is now in the British Museum, and does not belong to that species.

I have stated that Godman's acceptance of all the Kermadec forms as referable to one species, did not seem due to skilful judgment, as in the same place two species are admitted from South Trinidad Island, viz. *Œ. arminjoniana* Giglioli & Salvadori and *Œ. trinitatis* ibid. The only difference between these two species is that the latter is a uniform dark bird with wholly black legs, whilst the former is a variable coloured bird with sandalled legs. I have shown this character (of the coloration of the legs) to be absolutely valueless in connection with the Kermadec birds, and my examination of South Trinidad birds confirms me in the same conclusion.

As a matter of fact, the only differences apparent between the South Trinidad birds and the Kermadec ones, is that the former have slightly shorter toes and the latter have white shafts to the primaries, whilst the South Trinidad birds have dusky shafts. I might note that immature Kermadec birds have also dusky shafts. Mr. Grant lays great stress upon the latter character to decide the identity of the British specimen. I think that further investigation will show that white-shafted birds occur in the Atlantic. The British specimen is set up, but it certainly seems to me to have the short toes of the South Trinidad form.

Under the circumstances I think I am perfectly justified in advising the non-inclusion of *Œstrelata neglecta* in the British List.

Before leaving the subject I would draw attention to Hutton's proposed solutions to the problem of the variation of this species:—

(*a*) Two distinct species, sometimes producing hybrids.

(*b*) One excessively variable species, one form producing, or partially producing, in an irregular way, the other.

(*c*) Two species developed by ordinary variation going on for a long time, while the intermediate forms have not become extinct.

Hutton suggested that the last-named might be the best solution, but my experience leads me to select the second, and this would also account for the non-differentiation of the Meyer Island form. A species subject to much variation is less likely to show a fixed difference through slight isolation in a short time.

It is regrettable at the present time to see the ignorance of this group displayed by many writers who pretend to knowledge which they do not possess. Many of the statements made by Pycraft in his various works are inaccurate and misleading, as, written in a general manner, they have been adopted from special cases. In the 'Monograph of Petrels' an article "On the Systematic Position of the Petrels" includes the following sentence: "The young when hatched are blind." I have never seen a blind nestling of *Œstrelata* or *Puffinus*, though I have seen them emerging from the egg.

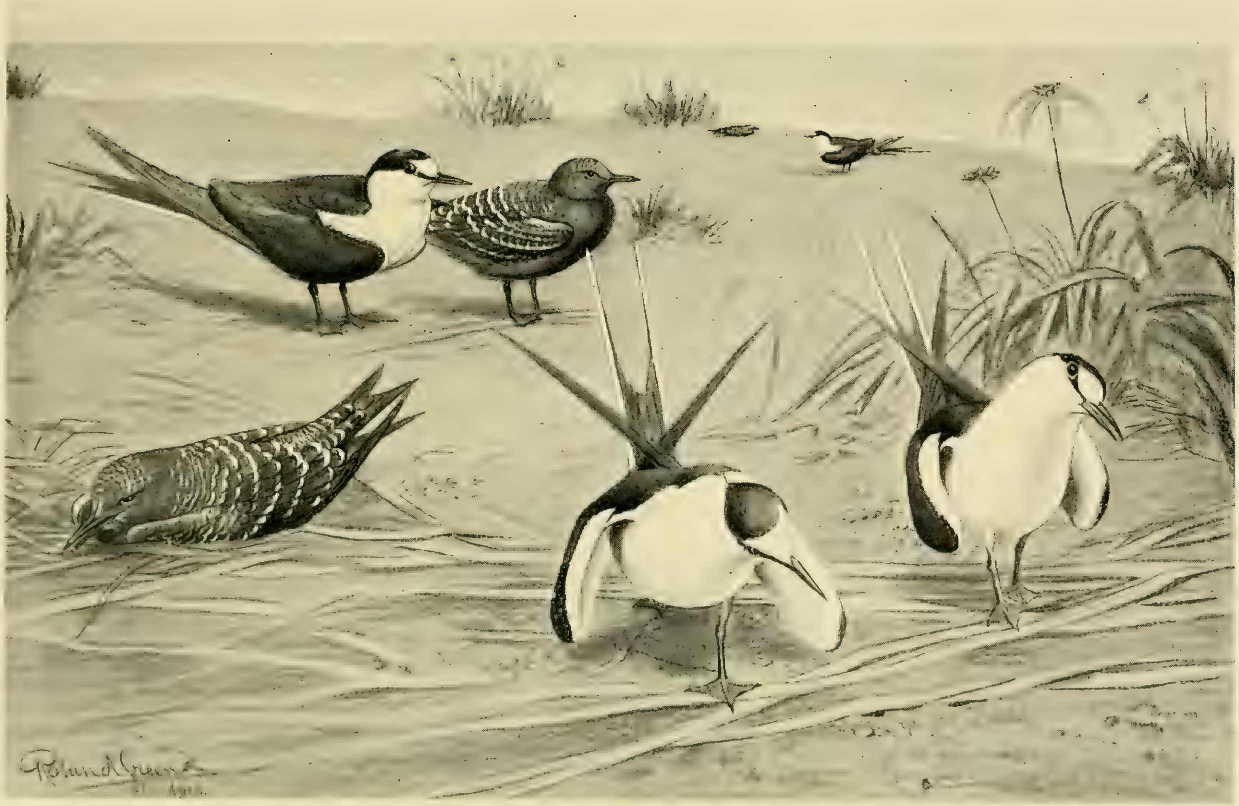
XXVI.—*On* Sterna fuscata *Linné*.

By Tom Iredale, M.B.O.U.

(Plate XVI.)

The beach at Sunday Island, in the Kermadec Group, when I landed was covered with breeding Wideawake Terns. As the season was well advanced half-grown young were plentiful, and the contrast between these dusky birds and their beautiful clean, boldly marked black and white parents, was a sight to remember. For weeks the work of camp building and luggage carrying made it necessary to pass amongst them many times daily. This dreary work done, much time was spent in photographing them and studying their habits.

Had I the pen of a Howard or Selous, pages might have been written and much interesting life-history related. As it is I cannot recount the curious antics which these birds indulged in, but I offer an illustration of a peculiar attitude


Roland Green

GROUP OF WIDEAWAKE TERNS.

adopted by a bird towards a trespasser upon the square foot sacred to its young one. I watched this walk-around many times, and was successful in obtaining a photo from which Plate XVI. was drawn. Though the birds walked round and croaked at each other, so far as my observation went, fighting never took place.

This picture will also show the point I wish to emphasize. In the Check List of the American Ornithologists' Union, 3rd ed. 1910, p. 46, the name *Sterna fuscata* Linn. 1776 is used for the Sooty Tern, hitherto more commonly known under the name *Sterna fuliginosa* Gmelin.

Upon investigation, the Linnean name is found to be solely based upon a bird described by Brisson (Ornith. vol. vi. 1760, p. 220), and figured on pl. xxi. fig. 1. The description and figure so unmistakably refer to the immature of this species that the name must be accepted. At my suggestion Mr. Mathews admitted it and has since used it in all his works. As birds agreeing perfectly in every detail with Brisson's description and figure are available for examination in the British Museum, there can be no doubt about the matter. However, in the 'Hand-list of British Birds' by Hartert, Jourdain, Ticehurst, and Witherby, 1912, p. 196, *Sterna fuliginosa* Gmelin is maintained whilst ? *Sterna fuscata* Linné is cited in the synonymy.

How this mistake occurred I cannot say as there is no uncertainty whatever about the name. I can only suppose that Dr. Hartert had in his mind the superficial resemblance of the adult *Sterna anæthetus* Scopoli to the adult *Sterna fuscata* Linné, and imagined without investigation that the immature must be alike and therefore that *Sterna fuscata* Linné might refer to either.

But such is not the case. The immature of *S. anæthetus* Scopoli is quite different and cannot be confused in any plumage with the young of the Wideawake; and there is no other Tern with a plumage at all like the bird Brisson described and figured. Linné's name *Sterna fuscata* must therefore be accepted in place of *Sterna fuliginosa* Gmelin for the Wideawake Tern.

XXVII.—*The Distribution and Nidification of the Tubinares in the North Atlantic Islands.* By DAVID A. BANNERMAN B.A., M.B.O.U., F.R.G.S.

(Plate XVII.)

THE following paper is an attempt to determine the local range of the several species and subspecies of Petrels, Shearwaters, and Fulmars which occur in the north Atlantic Islands; also to get together all the data which have been published with reference to the nesting-seasons in the various islands, and to give, in as concise a form as possible, a review of all the work done in the past relating to the Tubinares in the islands under discussion.

Besides many valuable papers written in English, many contributions have been made by French, German, Italian, Spanish, and Portuguese writers. Every one of these papers I have had carefully translated, and I hope that I have not overlooked any paper having an important bearing on the subject. A complete list of the various authors and works consulted is appended on page 446. For the most part I have only made use of papers when the writers have personally visited and made observations in the north Atlantic Islands. It is needless to add that without these papers it would have been utterly impossible to arrive at any conclusions regarding either the distribution or nesting-habits of the various birds. I should like particularly to acknowledge and call attention to the immense value of Padre Schmitz's "Diary Notes" on the Petrels inhabiting the Madeira Group of islands. This ornithologist has kept, for a period of over sixteen years, a concise and accurate record of the birds—particularly the Petrels—which have come to his notice during his residence in the island of Madeira, and has acquired a most valuable collection of birds, which is exhibited in his museum at Funchal.

The following members of the Order Tubinares come under our notice in the present paper :—

1. *Thalassidroma pelagica* (Linn.). The Storm-Petrel.
2. *Oceanodroma leucorhoa* (Vieill.). Leach's Fork-tailed Petrel.
3. *Oceanodroma castro* (Harcourt). The Madeiran Fork-tailed Petrel.
4. *Oceanites oceanicus* (Kuhl). Wilson's Petrel.
5. *Pelagodroma marina hypoleuca* (Moquin-Tandon). North Atlantic Frigate-Petrel.
6. *Puffinus gravis* (O'Reilly). Great Shearwater.
7. *Puffinus kuhli flavirostris* (Gould). Yellow-billed Atlantic Shearwater.
8. *Puffinus kuhli edwardsi* Oust. Cape Verde Islands' Shearwater.
9. *Puffinus puffinus puffinus* (Brünn.). Manx Shearwater.
10. *Puffinus assimilis baroli* Bonap. Atlantic Allied Shearwater.
11. *Puffinus lherminieri boydi* Mathews. Boyd Alexander's Shearwater.
12. *Œstrelata mollis feæ* Salvad. Fea's Soft-plumaged Petrel.
13. *Bulweria bulweri* (Jard. & Selby). Bulwer's Petrel.
14. *Fulmarus glacialis glupischa* Stejneger. Pacific Fulmar.

These fourteen birds may be classed as follows :—

Numbers 3, 5, 7, 8, 9, 10, 11, 12, and 13 are all regular breeding birds in one or more of the north Atlantic Archipelagos.

Number 1 has only been known to breed on one occasion, and is best included with numbers 2, 4, and 6, which are more or less rare visitors ; while number 14 is founded on a single record, and is unlikely to be again met with so far from its natural habitat.

Geographical Features.

Without exception, all the islands dealt with in this paper are volcanic in origin, and in many instances are surrounded by a great depth of water, particularly is this the case with the Azores. There is not space here to give an account of the physical features of the different groups, but each merits close attention. According to Sir Charles Lyell, the Madeira and Canary Groups date from the Miocene period, which is an important factor to remember when dealing with the present distribution of the Ornis.

By referring to the map (Plate XVII.), which has been specially prepared by Mr. H. Milne, draughtsman of the Royal Geographical Society, it will be seen exactly which groups are included under the heading of the north Atlantic Islands ; it is particularly intended to show the relationship of the various groups of islands to one another, and depicts the Azores, Madeira Group, Salvages, Canary and Cape Verde Archipelagos. Facing the map is a list (p. 441) of the above-mentioned groups with a table of the various islands of which they are composed, showing exactly which species of the Order Tubinares breeds on, or has been recorded from, each individual island. From this table it will be seen that in each archipelago the Petrels and Shearwaters resort to the smallest uninhabited islands upon which to rear their young, practically neglecting the larger islands.

I have also prepared a second table (p. 443) by which it can be seen at a glance whether any particular species breeds in, or is only recorded as a visitor from, each group of islands. Reference to the first table must be made when information is desired of a particular island in any group.

Distribution.

The correct geographical distribution of members of the Petrel family is exceedingly difficult to determine. Professor Newton, writing on the Petrels in the 'Dictionary of Birds,' went to the root of the matter when he remarked " . . . . it is only now beginning to be clear that until we know the breeding-place or places of each species—and some seem to be extremely restricted in this respect—we shall know very little to the point about their geographical distribution."

It is becoming more generally recognised every day that Petrels and Shearwaters do not travel such immense distances as they have formerly been credited with doing. For in the case of many species their range probably revolves round the particular locality to which they resort during the breeding-season. This may be said of *O. castro*, *P. m. hypoleuca*, *P. a. baroli*, *P. l. boydi*, and, in fact, the large

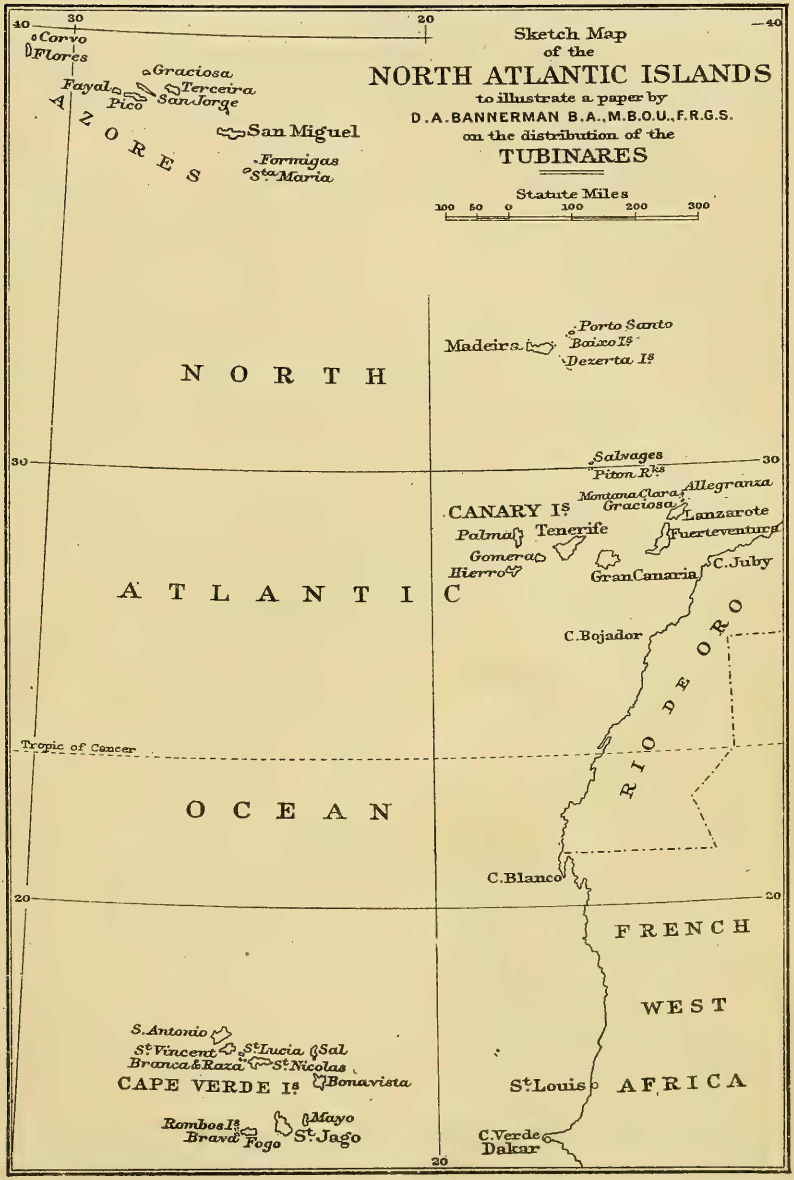

Sketch Map
of the
NORTH ATLANTIC ISLANDS
to illustrate a paper by
D. A. BANNERMAN B.A., M.B.O.U., F.R.G.S.
on the distribution of the
TUBINARES
Statute Miles
100 50 0 100 200 300
40
30
20
40
Corvo
Flores
Graciosa
Fayal
Terceira
Pico
San Jorge
AZORES
San Miguel
Formigas
Sta Maria
Porto Santo
Madeira
Baixo Is
Dezerta Is
NORTH
30
Salvages
Piton Rks
30
Allegranza
Montana Clara
Graciosa
CANARY Is
Lanzarote
Palma
Tenerife
Fuerteventura
Gomera
Hierro
C. Juby
Gran Canaria
ATLANTIC
C. Bojador
RIO DE ORO
Tropic of Cancer
OCEAN
C. Blanco
20
20
FRENCH
WEST
AFRICA
S. Antonio
St Vincent
St Lucia
Sal
Branca & Raza
St Nicolas
CAPE VERDE Is
Bonavista
St Louis
Mayo
Rombos Is
Brava
Fogo
St Jago
C. Verde
Dakar
20

TABLE showing the particular Islands in the North Atlantic Ocean upon which the Petrels and Shearwaters Breed, or from which they have been recorded as Visitors.

AZORES.

2, 3, **4, 5,** 7, ? 9, 10, ? 13.

Santa Maria, 3, 7.
Formigas Rocks.
São Miguel, **2, 3, 10.**
Graciosa, **3,** 7, **10.**
Terceira, 7.
São Jorge, 7.
Pico, 7, **10.**
Fayal, **4,** 7.
Corvo, 13.
Flores, 7, ? 9, 10.

CANARY ISLANDS.

1, 2, 3, 4, 5, 6, 7, ? 9, 10, 13.

Allegranza, 7, ? 9.
Montaña Clara, **1,** 7, 10, 13.
East Rock, 7.
West Rock, 7.
Graciosa, 7, ? 10.
Lanzarote, 7.
Lobos, 7.
Fuerteventura, 7.
Gran Canaria, **2, 3,** 7, 10.
Tenerife, **1, 2, 4, 5,** 7, **9,** 10, 13.
Palma, ? **9.**
Gomera.
Hierro.

CAPE VERDE ISLANDS.

2, 3, 5, 8, 11, 12, **13.**

St. Antonio.
St. Vincent, **2, 8.**
St. Lucia.
Branca, 3, 5, **8,** 11.
Raza, **3,** 8, **11, 13.**
St. Nicholas, **3,** ? 12.
Sal.
Bonavista.
Mayo.
St. Jago, **11.**
Fogo, **11, 12.**
Brava, 8.
Rombos Is.
  Grande.
  Luiz Carneiro.
  Cima, 3, 5, 11.

MADEIRA, **1, 2,** 3, **4, 5, 6,** 7, 9, 10, 12, 13, **14.**

DESERTAS GROUP.	Chao Isl. Deserta Grande. Bugio Isl.	1, 3, 7, 9, 10, 12, 13.
PORTO SANTO GROUP.	Porto Santo. Cima Isl. Baixo Isl. Ferro Isl.	3, 7, 9, 10, **12,** 13.
SALVAGE IS. GROUP.	Great Salvage. Great Piton. Little Piton.	3, 5, 7, ? 9, 10, 13.

The numbers refer to the following fourteen species :—

1. *Thalassidroma pelagica.*
2. *Oceanodroma leucorhoa.*
3. *Oceanodroma castro.*
4. *Oceanites oceanicus.*
5. *Pelagodroma marina hypoleuca.*
6. *Puffinus gravis.*
7. *Puffinus kuhli flavirostris.*
8. *Puffinus kuhli edwardsi.*
9. *Puffinus puffinus puffinus.*
10. *Puffinus assimilis baroli.*
11. *Puffinus lherminieri boydi.*
12. *Œstrelata mollis feæ.*
13. *Bulweria bulweri.*
14. *Fulmarus glacialis glupischa.*

EXPLANATION.

Plain numbers denote that the species to which that number refers is found *breeding* on the group of islands, or particular island, against which it is placed.

Numbers printed in heavy type denote that the species to which that number refers is recorded from the group of islands, or that particular island, against which it is placed, but that the bird *does not breed* so far as we know.

A ? placed before a number denotes that there is either unsatisfactory or contradictory evidence concerning the species to which that number refers. Each species is fully dealt with separately and should be consulted for details.

majority of Petrels and Shearwaters which breed in the north Atlantic Islands, and which are hardly ever recorded outside their own particular sphere until we draw near to another breeding-station, perhaps at the other side of the world. Even in such a comparatively small radius as is included in the accompanying map, the distribution of individual species is very striking. For instance, *O. castro* and *Œ. m. feæ* each breed in the Madeira Group and in the Cape Verde Archipelago, but do not, so far as we know, breed on the Canary Islands, which lie between them. Another similar case is *P. m. hypoleuca* breeding on the Salvage Islands and on the Cape Verde Islands, but not on the Canary Group. Surely this points to very circumscribed distribution at the present day, else why should not *P. m. hypoleuca* have taken up its abode on Montaña Clara, an uninhabited island of the eastern Canary Islands suited in every way to its requirements? The reason why so many of the Petrels inhabiting the Atlantides have their nearest allies in the Pacific Ocean is certainly hard to explain, particularly as there are no links or geographical subspecies in the regions between. Bulwer's Petrel (*B. bulweri*) inhabits, in addition to the north-east Atlantic, the Hawaiian Islands, and, as far as we know, the bird does not breed anywhere in the western part of the Atlantic.

The only possible explanation of the peculiar range of Bulwer's and other Petrels whose different colonies are often separated by vast areas, is to be looked for in the great antiquity of the order to which they belong, and to the enormous changes which have taken place in the distribution of land and water on the surface of the earth. The question is too complex to be more than alluded to in this paper, but it seems to be a much neglected study. In all the comprehensive works dealing with "Petrels" which have appeared, I can find no attempt at an explanation of the present geographical distribution which many species enjoy.

In former days the Petrel family must have had a very extended range, which is yearly becoming more circumscribed. The birds which at one time ranged universally from the north Atlantic to the south Pacific are now becoming

Table showing Distribution and Nidification Records of Tubinares in the North Atlantic Islands.

	AZORES.	MADEIRA.	DESERTAS.	PORTO SANTO.	SALVAGES.	CANARY IS.	CAPE VERDE IS.
1. *Thalassidroma pelagica*	......	Visitor.	Visitor. Has bred on one occasion.	......	......	Visitor.	......
2. *Oceanodroma leucorhoa*	Rare visitor.	Rare visitor.	......	......	......	Occasional visitor.	Visitor.
3. *Oceanodroma castro*	Breeds.	Breeds.	Breeds.	Breeds.	Breeds.	Rare straggler.	Breeds.
4. *Oceanites oceanicus*	Rare visitor.	Very rare visitor.	......	......	......	Very rare straggler	......
5. *Pelagodroma marina hypoleuca.*	Accidental visitor.	Accidental visitor.	......	......	Breeds.	Accidental visitor.	Breeds.
6. *Puffinus gravis*	......	Very rare straggler	......	......	......	Very rare straggler	......
7. *Puffinus kuhli flavirostris*	Breeds.	Breeds.	Breeds.	Breeds.	Breeds.	Breeds.	......
8. *Puffinus kuhli edwardsi*	......	......	......	......	......	......	Breeds.
9. *Puffinus puffinus puffinus*	Said to breed.	Breeds.	Breeds.	Breeds.	Said to breed.	Visitor. Said to have bred, evidence unreliable.	......
10. *Puffinus assimilis baroli*	Said to breed sparingly.	Breeds.	Breeds.	Breeds.	Breeds sparingly.	Breeds.	......
11. *Puffinus lherminieri boydi*	......	......	......	......	......	......	Breeds.
12. *Œstrelata mollis feæ*	......	Breeds.	Breeds.	Recorded Baixo Is. Doubtful if breeds.	......	......	Almost certainly breeds.
13. *Bulweria bulweri*	Said to breed 1855. No record since.	Breeds.	Breeds.	Breeds.	Breeds.	Breeds.	Very rare straggler.
14. *Fulmarus glacialis glupischa*	......	Accidental visitor. One record only (*Harcourt*).	......	......	......	......	......

isolated in often widely distant localities. Intermediate colonies may be totally wiped out, for it has often been proved that all the Tubinares have a highly-developed homing-sense and become strongly attached to the particular breeding-station to which they resort. The birds will return year after year to the same small island no matter to what extent they are subjected to persecution from man, rats, mice, mongooses, or the other innumerable enemies with which ground-nesting birds have to contend. Padre Schmitz records an unusual agent of destruction when, in a certain year, all the young *P. k. flavirostris* were found dried up in their holes on the Salvage Islands suffocated by the sirocco.

In addition to *B. bulweri*, we have the interesting case of *Oceanodroma castro*, which breeds in the north Atlantic Islands and almost certainly in the Hawaiian and Galapagos Groups in the Pacific. Birds from the Atlantic and Pacific are quite indistinguishable from one another, although there are hundreds of miles between them and *no intermediate colonies exist*. Both these cases point to a discontinuous distribution.

A different example is afforded by the White-faced or Frigate-Petrel. The Frigate-Petrel of the north-east Atlantic has become so differentiated from the typical race as to be readily distinguished by the longer bill and the lighter colouring of the upper parts, and should be known as *P. m. hypoleuca*.

Two noteworthy examples of curious distribution are the Little Shearwaters, *Puffinus assimilis baroli*, inhabiting the Azores, Madeira, and Canaries, and *Puffinus lherminieri boydi*, which is confined to the Cape Verde Group. These are dealt with more fully on pages 477 and 483.

It is unfortunate in determining geographical races that it is impossible to fix the parent race. This must not be confused with the typical species, which, as everyone knows, is the term applied to the first member of the species known to have received a name. Necessarily this is not always the most ancient species from which other so-called geographical races have sprung.

In giving the "Distribution beyond the North Atlantic Islands" in each of the fourteen species dealt with, I have particularly made use of :—

Godman's 'Monograph of the Petrels';
Vol. xxv. of the 'Catalogue of Birds';
Vol. ii. of Mathews' 'Birds of Australia';
Jourdain's Distribution Notes in the 'British Bird Book,' vol. iv; and
The 'Hand-list of British Birds' by Hartert and others.

I have not gone into the life-history of these Petrels and Shearwaters, as their habits, so far as we know them, have been fully dealt with in various papers published in 'The Ibis,' as well as in several large works, such as Godman's 'Monograph of the Petrels,' Mathews' 'Birds of Australia,' the 'British Bird Book,' &c. The latter deals only with the species which breed in, or have straggled to, English waters, but reference is made to several species included in the following pages. I have particularly mentioned this work as in it Mr. Pycraft makes a statement which is not borne out by my experience of these birds. He writes, when speaking of Petrels in general, "All are strictly marine species, never leaving the extreme edge of the coast, never straying out of sight or sound of the sea." If Mr. Pycraft will study the nesting-habits of *Puffinus kuhli flavirostris*, *Puffinus puffinus puffinus*, or *Œstrelata mollis feæ*—to mention only three species which inhabit the north Atlantic Islands—he will soon be convinced that such a general statement needs correction. All the three members of the Petrel family here mentioned often nest a long way from the sea, flying sometimes into the very heart of a mountainous island, where they rear their young amongst the highest peaks. An even better example of the long distance which a Petrel sometimes travels from the sea is afforded by the Blue Mountain Petrel (*Œstrelata jamaicensis*) in the island of Jamaica, now, unfortunately, almost, if not quite, extinct. Having spent some time in these mountains I can speak with certainty of the great distance from the sea which this bird would have to travel, for it is said to have bred "on the highest tops of the mountains" in this range. *Œstrelata hasitata* is another well-known example in the Caribbean Sea. In fact, it would appear that the members of the genus *Œstrelata* are particularly addicted to nesting as "far from the sight and sound of the sea" as they can get!

The following is a list of the ornithological works consulted which deal with the Petrels and Shearwaters of the north Atlantic Islands, arranged in alphabetical order according to the authors:—

ALEXANDER, BOYD. (*Cape Verde Islands.*)
Ibis, 1898, pp. 74–118, 277–285.
BANNERMAN. (*Canary Islands and Madeira.*)
Ibis, 1912, pp. 557–627; 1914, pp. 38–90, 228–293.
Private note-books.
BARING and OGILVIE-GRANT. (*Salvage Islands.*)
Zoologist, 1895, pp. 401–417.
BERTHELOT. (*Canary Islands.*)
See WEBB.
BOCAGE, BARBOZA DU. (*Azores and Cape Verde Islands.*)
Jorn. Acad. Sci. Lisboa, 1866, pp. 89–92; 1875, pp. 113–120; 1898, pp. 140–150; 1902, pp. 206–210.
BOLLE. (*Canary Islands and Cape Verde Islands.*)
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A careful study of all the available literature on the subject of the north Atlantic Petrels has convinced me that much still remains to be learnt. Further research in almost every group of islands with which we are dealing is absolutely necessary if we are to thoroughly understand the distribution and nesting-seasons of these ocean wanderers. The Madeiran group is certainly the best "worked" up to the present, but the other islands are not by any means thoroughly explored in this respect, and would well repay visiting.

1. **Thalassidroma pelagica.** Storm-Petrel.

Type locality—Coast of Sweden (*Hartert*).

Procellaria pelagica Linn. Syst. Nat. 10th ed. i. 1758, p. 131; Godman, Monograph of Petrels, p. 1, pl. i.

Breeding range in the North Atlantic Islands.

Desertas (Madeira Group). ? Canary Is.

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* This is not a complete list of Padre Schmitz's writings in the Z. f. O.

Range beyond the North Atlantic Islands.

Eastern portions of north Atlantic south to west Africa, also western Mediterranean.

General Conclusions.

T. pelagica is not a very common bird in these seas, although it is pretty regularly distributed. There is only one record of its having bred on any of the north Atlantic Islands, although I strongly suspect it of breeding occasionally on one or two of the more isolated islets. It has not been recorded as yet from the Azores, Salvages, or the Cape Verde Islands, the latter group being rather far south, although there is one skin in the British Museum from the Gold Coast and another obtained by Mr. Willoughby Lowe, 30 miles north of the equator off the African coast.

Breeding range in the Madeira Group.

The only evidence that the Storm Petrel has ever bred in this group is furnished by three eggs belonging to this species (*ex* Tristram Coll.) now in the British Museum, which are said to have been taken on the 'Desertas' in the year 1849, probably by Dr. Frere.

Padre Schmitz has apparently never heard of any eggs being taken during his residence in the island, and has seldom met with the bird. He records what he believes to have been three examples of *T. pelagica,* seen near Deserta Grande on the 24th of September, 1905. He also mentions having received a letter from Dalgleish in which that gentleman writes, "*P. pelagica* has been seen near Madeira."

In the first two 'Lists' published by Harcourt, that ornithologist includes *T. pelagica* with the remark "Doubtful" against this species. In his third List he has apparently established the Storm-Petrel as an accidental visitor to Madeira, for he records it without any remark. It was also mentioned from Madeira by Drouet, in 1861.

Breeding range in the Canary Islands.

There is no actual record of the Storm Petrel *breeding* in the Canary Group, although the following experience leads me to suppose that it does so very occasionally on the uninhabited islets or rocks. While staying on Montaña Clara from June 7–14, 1913, we procured a Storm-Petrel from a hole in a cave on June the 9th (Ibis, 1914, pp. 78, 263). The bird was a male, and the testes were enormously developed. Taking into consideration that eggs have been found in the Madeira Group, it seems reasonable to suppose this bird intended nesting on Montaña Clara.

Webb and Berthelot write in 1841: "It appears that this species is found from time to time on the coasts of the Canary Islands." Bolle in 1857 notes that "*T. pelagica* Vig. is the Storm-Petrel most frequently found in the Canary Seas." Drouet mentions it in his list. Meade-Waldo in 1893 found it always about the islands, but did not discover it breeding.

Cabrera possessed a specimen which had been caught in Tenerife, and remarked that it occurred fairly frequently, but was rare in certain seasons.

Polatzek considered it a rare visitor to the Canaries, but he does not appear to have spent much time at sea.

2. **Oceanodroma leucorhoa.** Leach's Fork-tailed Petrel.

Type locality—France.

Procellaria leucorhoa Vieillot, Nouv. Dict. d'Hist. Nat. nouv. ed. xxv. 1817, p. 422.

Oceanodroma leucorrhoa (Vieill.); Godman, Monograph of Petrels, p. 8, pl. iv.

Range in the North Atlantic Islands.

A casual visitor. Recorded from the Azores, Madeira Group, Canary Islands, Cape Verde Islands.

Range beyond the North Atlantic Islands.

North Pacific and north Atlantic roughly south to the Equator. Willoughby Lowe obtained specimens off Sierra Leone. There are several in the British Museum obtained off the Liberian coast.

Record of occurrences in the North Atlantic Islands.

Azores.—Occasionally taken in this group; Ogilvie-Grant records two specimens. Godman did not meet with it.

Madeira Group.—Evidently a very rare wanderer to the Madeira Islands. Schmitz obtained his first genuine example of this species on the 9th of November, 1906. According to the same writer, Harcourt included it in one of his lists of non-breeding birds from Madeira on the authority of Sir William Jardine, and carefully distinguished it from *O. castro*, which is mentioned at the same time. Drouet mentions having seen this Petrel in Madeira in 1861.

Canary Islands.—Meade-Waldo believed this species to be an occasional visitor in winter; he did not see it at any other time of the year. There is a specimen in the British Museum which he obtained in Tenerife on the 23rd of February. Nicoll saw many *O. leucorhoa* just before sighting Gran Canaria on the 12th of November. Von Thanner's statement that this species breeds on Montaña Clara rests on utterly unreliable evidence.

Cape Verde Islands.—Neither Boyd Alexander nor Fea mention having seen this Petrel amongst the islands. Dr. Lowe, however, has several notes in his diaries referring to *O. leucorhoa* during his cruise amongst the Cape Verdes. The first entry, dated January 13th, 1906, is as follows:—"Followed by many small Petrels, apparently all *O. leucorhoa*. Later, 10 P.M. (same date): apparently going through an increasing crowd of Petrels, or else they have been attracted by the lights of the yacht, for I secured four birds (*O. leucorhoa*) which fell on the deck more or less exhausted. During the night twenty or more Petrels boarded us. Arrived St. Vincent, Cape Verde, at 7 A.M., January 14th."

3. **Oceanodroma castro.** Madeiran Fork-tailed Petrel.

Type locality—Desertas (Madeira Group).

Thalassidroma castro Harcourt, Sketch of Madeira, 1851, p. 123.

Thalassidroma jabe-jabe Bocage, Jorn. Acad. Sci. Lisboa, 1875, p. 120 : Cape Verde Is.

Cymochorea cryptoleucura Ridgway, Proc. U.S. Nat. Mus. iv. 1882, p. 337 : Hawaiian Is.

Oceanodroma castro (Harcourt) ; Godman, Monograph of Petrels, p. 15, pl. v.

Breeding range in the North Atlantic Islands.

Azores, Madeira Group, Salvage Is., Cape Verde Is.

Range beyond the North Atlantic Islands *.

South Atlantic—St. Helena (breeding).

Pacific Ocean—Hawaiian Islands and Galapagos Islands.

For accidental wanderings, see Godman's 'Monograph of Petrels.'

Although the island of St. Helena does not come within the scope of this paper, it may be of interest to state what is known of the occurrence of *O. castro* on that island. To begin with, Godman, in the 'Monograph,' writes : "It has been found in the neighbourhood of St. Helena, where a specimen was obtained by Governor Janisch." This specimen and another adult obtained in the same year (1876) are now in the British Museum, while there are also two other skins in the National Collection obtained on Egg Is., St. Helena, by J. T. Cunningham, on March 23, 1910. One of these birds is an adult, but the other is a juvenile *just out of down*, which was, as Mr. Cunningham informs me, taken from the nest-hole. Now, in a book entitled 'St. Helena,' by J. C. Melliss, published in 1875, in which is given a list of the birds of this island, we find only two members of the Petrel family mentioned : one is *Procellaria glacialoides*, while the other is "*Thalassidroma melanogaster* ?—Mother Carey's Chicken. A small species of Petrel frequenting the sea around the island, but not very abundant; lays in November." What more likely than that this so-called *T. melanogaster*—an inhabitant of the Australian Seas and south Indian Ocean—is in reality *Oceanodroma castro* (Harcourt) *breeding in St. Helena in November.*

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* Up to the present there are not any records of the eggs of *O. castro* having been taken in the Pacific Islands. It is most probable, however, that it will be found breeding in both the Hawaiian and Galapagos Archipelagos.

General Conclusions.

The very extraordinary range of this species has excited the curiosity of every naturalist who has turned his attention to the geographical distribution of the Procellariidæ. In the north Atlantic it is a remarkable fact that up to the present there is no reliable record of its having bred on any of the islands of the Canary Archipelago, although it breeds in every other group of the north Atlantic islands from the Azores to the Cape Verde Islands, and as far south as St. Helena.

In the groups with which this paper deals it will be seen by referring to the appended schedule that *Oceanodroma castro* may be found engaged in nesting duties *in every month of the year.*

It appears, therefore, that this Petrel has two main breeding-seasons—at any rate, in the Madeira Group, which are the only islands upon which consecutive notes have been made extending throughout the entire year and, in this case, for a number of years. The only alternative which presents itself is that *O. castro* breeds indiscriminately "whenever the spirit moves it," which is a theory I cannot bring myself to believe!

Undoubtedly the bird is somewhat erratic in its breeding-season, which accounts for the prolonged period in which eggs and young birds may be found.

In studying this problem we must bear in mind two important factors :

1. The breeding-season varies considerably in each separate group of islands, and in some cases even in each individual island of the same group, and because we find the birds breeding in the Desertas in June, it

does not necessarily follow that we shall discover them at their breeding-station in the Azores at the same time.

2. That in a single island there may be two distinct seasons in which birds lay their eggs. This is particularly the case on Porto Santo.

From this we may deduce that the several nesting-colonies of these birds breed entirely independently of one another, although they each may, and probably do, keep to a definite season, as well as to a particular island or part of an island.

As the Madeira Group has been better "worked" than any of the other Atlantic islands, I have based my deductions very largely on Padre Schmitz's Diaries, which have appeared from time to time in the 'Ornithologische Jahrbuch.'

Records connected with the Distribution and Breeding-Season of *Oceanodroma castro* in the North Atlantic Islands.

Jan.	14.	Two adults boarded yacht 50 miles S.E. of St. Vincent on our way to Santiago (Cape Verde Is.) : P. Lowe.
	29.	Two down-covered young taken (Madeira Group): Schmitz.
Feb.	13.	Down-covered young (Porto Santo) : Schmitz. One egg taken (Desertas) : Dalgleish.
	24.	Three young obtained, one just hatched (Porto Santo): Schmitz.
March	16.	Ten adults, four young-in-down, seven eggs (Rombos Is., C. V.) : Alexander.
	25.	One down-covered young (Madeira Group) : Schmitz.
April	6.	One young bird, almost full-fledged (Madeira Group): Schmitz.
	21.	One adult obtained, birds not yet breeding (Great Salvage) : O.-Grant.
	25.	One adult obtained, birds not yet breeding (Praya Is., Azores) : O.-Grant.
May	5.	Adults, young, and eggs (Branca, C. V.) : Alexander.
	1–29.	None met with (Azores) : O.-Grant.
	22 & 23.	Numbers seen nearing S. Miguel (Azores) : P. Lowe.

June	1.	Birds not yet breeding, one adult picked up dead (Villa Islet, Azores): O.-Grant.
	6.	Two fresh eggs obtained (Madeira Group): Schmitz.
	13.	Two fresh eggs obtained (Madeira Group): Schmitz.
Mid-June.		Fifteen eggs well incubated (Baixo Is., Porto Santo): Schmitz.
	18.	One egg (Porto Santo): Schmitz.
	21.	Few eggs, mostly incubated (Madeira Group): Schmitz.
	23.	One egg obtained (Baixo Is., Porto Santo): Schmitz.
	24.	Two eggs obtained (Porto Santo): Schmitz.
	25.	Four eggs obtained (Desertas): Schmitz.
	26.	Birds breeding (Madeira): Schmitz.
July	17.	Two birds brought from Porto Santo: Schmitz.
August	1.	One fresh and one incubated egg found (Madeira Group): Schmitz.
	17.	Adult birds obtained (Madeira): Schmitz.
	22.	One young-in-down (Desertas): Schmitz.
Sept.	1.	Down-covered young (Porto Santo); Schmitz.
	12.	Birds obtained (Porto Santo): Schmitz. Birds captured by Snr. Camara apparently come ashore to breed (Villa Islet, Santa Maria, Azores): O.-Grant.
	21.	*O. castro* first seen at sea (between Lisbon and Madeira): Schmitz.
October.		The first eggs collected (Porto Santo): Schmitz.
	11.	Two adults collected (Raza, C. V.): Alexander.
End of Oct.		Not breeding, but very abundant (Raza, C. V. Is.): Fea.
Nov.	1-6.	Ten adults obtained (Raza, C. V.): Fea.
	—.	Eggs more or less incubated (Porto Santo): Schmitz.
	27.	Very few seen at sea nearing the Desertas: P. Lowe.
	End of Nov.	This is the time to be recommended for egg-hunting (Madeira Group): Schmitz.
Dec.	13.	Downy young and eggs (Cima Is., Porto Santo): Schmitz.
	20.	One egg (Porto Santo): Schmitz.
	23.	Thirteen eggs slightly incubated (Porto Santo): Schmitz.

Breeding range in the Azores.

We have so little information with regard to the Petrels and Shearwaters which breed in the Azores, that it is not possible to determine whether *O. castro* has more than one breeding-season in the year on this group. Only two expeditions of note have been made to these islands by ornithologists—the first by Godman, who spent a month in the spring of 1865 exploring the islands, and the second by Ogilvie-Grant, who remained in the group from February 26 until June 2, 1903. Godman did not meet with the bird at all, and does not include it in his list*. Ogilvie-Grant, however, established the species without doubt as an inhabitant of the Azores, and obtained an adult male on Praya Island (Graciosa) on April 25, while he also identified a bird of this species in the Ponta Delgada Museum, marked Ponta Delgada, San Miguel. While yet another specimen was "picked up dead on June the 1st at Villa Islet, Santa Maria."

Mr. Ogilvie-Grant remarks that "at this season (beginning of June) the birds had not commenced to breed, and all their nesting-holes on that breeding-station were empty. The fishermen knew the bird well, and Senhor João S. G. da Camara kindly promised to procure specimens later on and forward them to England in spirits. This he did, the birds having been obtained in September." These specimens were obtained on Villa Islet, Santa Maria. It does not appear, therefore, that *O. castro* resorts in the spring to breed in the Azores, but it is quite possible that the birds arrived at their breeding-holes late in June, after Mr. Grant had left the group. A great deal more evidence is required before we can make any satisfactory deductions.

Dr. P. R. Lowe, during his visit on the 22nd of May, 1907, notes that *O. castro* was noticed in numbers, when 230 miles west of S. Miguel. The following day (May 23) the birds followed the yacht until within sight of Ponta Delgada.

Breeding range in the Madeira Group.

Oceanodroma castro breeds on all the islands of this group without exception, including as it does, Madeira, the three islands of the Desertas, and Porto Santo, with their outlying rocks and small islets.

An examination of the appended table which I have drawn up, will show that it is very difficult to determine exactly when the breeding-season commences. Padre Schmitz, whose excellent bird diaries cover a period of over seventeen consecutive years (1893–1910) for these islands alone, has furnished us with sufficient data to attack the problem with some chance of arriving at a successful conclusion.

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* 'Ibis,' 1866, p. 88; also Nat. Hist. of Azores.

The island of Porto Santo is unquestionably the one most favoured by this Petrel upon which to breed, and to this island the majority of Padre Schmitz's notes refer.

Either young-in-down or the eggs have been actually taken in the Madeira Group in each of the following months:—January, February, March, April, June, August, September, October, November, and December; while it will be seen, by glancing at the dates in the above-mentioned schedule, that either incubation of eggs or the rearing of the young takes place in this group of islands in every month of the year save, perhaps, May.

At first sight it would appear, therefore, that *O. castro* has no fixed time in which to breed in this group, but a closer study of the facts has induced me to believe that the bird *has two main breeding-seasons.* I do not necessarily mean by this that the same birds breed twice in the year, although there is no apparent reason why they should not. It will be seen that June is the first month in the year when nesting may be said to have become general; the next month in which any quantity of *fresh* eggs appear to have been collected is October; in November the eggs found were mostly incubated; in December the young are in various stages of development while late birds still have eggs, which accounts for young-in-down being sometimes found as early in the year as February and March.

We then have two distinct seasons; the first commencing in June and extending through July, August and September, the second commencing in October and extending through November and December—the late birds of the first season "overlapping" the early ones of the second.

In 1899, Padre Schmitz advanced the theory that the principal breeding-seasons of the Madeiran Fork-tailed Petrel were in December and June. He subsequently (Orn. Jahrb. 1900, p. 218) came to the conclusion that this Petrel did not keep to any definite breeding-season at all; since then I have not seen any opinions on this subject expressed in print.

The query naturally arises, "Why do not all these Petrels breed at the same time of the year, at any rate in the one island where the conditions are exactly the same?"

The equable and temperate climate of the Madeira islands probably plays no small share in the matter, the birds are in no hurry to leave their shores and need live in no fear of being suddenly "driven south" through stress of weather. Again, Porto Santo is the known breeding-station of at least six different species of Petrel and Shearwater, and it may be imagined that the birds must have their work cut out to find suitable nesting-holes, especially when, in the month of June, all the larger crevices and miniature caves are filled to overflowing with *Puffinus kuhli flavirostris*.

According to different observers *O. castro* is non-migratory —that is to say, it is to be found throughout the year in the neighbourhood of Madeira. And even when it has reared its young it probably does not wander very far afield.

Breeding range in the Salvage Islands.

Oceanodroma castro was discovered on the Salvage Islands by Mr. Ogilvie-Grant when he paid a short visit to these wave-washed islets in the spring of 1895. Unfortunately, these Petrels had not yet come ashore to breed, and Mr. Grant only succeeded in capturing a single specimen on Great Salvage Island on the 21st of April. A number of birds were, however, seen by day in the vicinity of the islands. Mr. Grant learnt from the pilot of his boat that *O. castro* breeds commonly on the Little Piton, but circumstances prevented his landing on this member of the group. Schmitz includes it in his list of breeding birds of the Salvages on the authority of Señor Constantino de Noronha.

Range in the Canary Islands.

Mr. Nicoll states that he saw large numbers of *O. castro* on November 12 just before reaching Gran Canaria during the cruise of the 'Valhalla,' but it is not mentioned by anyone else, with the exception of Polatzek, who gives it on hearsay, with no real evidence whatsoever: I do not believe *O. castro* ever occurs in the Canaries except as a rare straggler.

Breeding range in the Cape Verde Islands.

Boyd Alexander found the Madeiran Fork-tailed Petrel breeding in the Archipelago on both of his successful visits to the Cape Verde Islands in 1897. In his first expedition, which extended from February 10 until the end of May, *Oceanodroma castro* was discovered first on the Rombos Islands, a group of small uninhabited islets 5 miles to the north of Brava. Apparently of this small group only one—Cima Island—is inhabited by the Petrels, and there *O. castro* was found breeding on March 16, "many of which had young, while most of the eggs were well incubated."

Two months later, when exploring the island of Branca, Boyd Alexander again came upon this Petrel breeding in the first week of May. He notes that they had young, and obtained five eggs of this species on the island.

The second expedition was made in October of the same year, and on this occasion two weeks, from the 7th to the 22nd of October, were spent on the island of Raza, which lies next to Branca. Two specimens of *O. castro* were obtained on the 11th inst., but no mention is made of their breeding during this month. The only known breeding-season therefore in the Cape Verde Islands are the spring months, March, April, and May.

L. Fea, who spent a considerable time in the Cape Verde Islands and has published the valuable results of his expedition in the Boll. Soc. Geog. Ital. ser. 3, 1898–9, has given an account of this bird, which Count Salvadori has published (*cf.* Ann. Mus. Civ. Genova, vol. xx. 1899, pp. 301–2). Fea particularly mentions the island of

S. Nicolas in connection with this bird, but does not say whether he found it breeding there. He also obtained ten birds on Raza between the 1st and the 6th of November, but they did not appear to be breeding.

The birds were not breeding on Cima Island at the time of Fea's visit in August.

Dr. P. R. Lowe met with the bird on January 14th, fifty miles south-east of St. Vincent, on his way to Santiago.

4. **Oceanites oceanicus.** Wilson's Petrel.

Type locality—Southern Oceans.

Procellaria oceanica Kuhl, Beiträge z. Zool. 1820, p. 136.

Oceanites wilsoni Keyserling u. Blasius, Wirbelth. Eur. 1840, pp. xciii, 238.

Oceanites oceanicus (Kuhl); Godman, Monograph of Petrels, p. 41, pl. xii.

Range in the North Atlantic Islands.

A casual visitor, never approaching very close to land; recorded within a radius of 30 miles from the Azores, Madeira Group, and Canary Islands.

Range beyond the North Atlantic Islands.

Found in all seas except the north Pacific.

Record of occurrences in the North Atlantic Islands.

Azores.—Not mentioned by Morelet or by Drouet in their works on the Azores. First noticed by Godman, who saw numbers at sea about 30 miles west of Fayal; skins obtained at this time (May 21, 1865) are now in the British Museum. Godman knew nothing of the species breeding in the archipelago, but thought that they remained throughout the year. Bocage includes this Petrel in his list (1866), and Simroth, writing in 1888, mentions that *O. oceanicus* follows the American ships until they are within sight of Flores in the Azores.

Ogilvie-Grant did not meet with this species during his expedition to the islands in 1903.

Madeira Group.—Padre Schmitz's remarks on this Petrel sum up its distribution in the Madeira Group better than anything else. He notes, "These birds do not approach the shore closely .... Dalgleish writes, *O. oceanicus* has been seen near Madeira."

Canary Islands.—Wilson's Petrel is mentioned by several writers on this group, but very few appear to have actually seen the bird. Meade-Waldo observed them occasionally at all seasons, particularly on May 15, 1888, off Garachico, Tenerife. There is a specimen in the British Museum obtained by Lort Phillips in May, "south of the Canaries."

5. **Pelagodroma marina hypoleuca.** North Atlantic Frigate-Petrel.

*Type locality—Tenerife (Canary Is.).

Thalassidroma hypoleuca Moquin-Tandon, in Webb, Berthelot et Moquin-Tandon, Orn. Canarienne, 1841, p. 45.

Pelagodroma marina (Lath.); Godman, Monograph of Petrels, p. 53. (The bird figured in the 'Monograph,' pl. 15, is said to be from New Zealand seas = *P. m. maoriana* Mathews)

Range in the North Atlantic Islands.

Salvage Is., Cape Verde Is.; accidental in the Azores, Madeira Group, and Canary Is.

Range beyond the North Atlantic Islands.

Has occurred as a straggler off North America and the British Isles. Represented by allied forms in Australian and New Zealand seas.

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[*] It is unfortunate that Moquin-Tandon gives "Les Parages de Téneriffe" as the habitat of this species, which must perforce become the type locality. The bird is, curiously enough, only an accidental wanderer to the Canarian Seas. Its true home is the Salvage Islands, though it also breeds on the Cape Verde Group.

General Conclusions.

Former workers on the north Atlantic Islands have, almost without exception, referred to the species under discussion as *Pelagodroma marina* (Latham). The type locality of Latham's bird is 37° S. lat. and is accepted for the Australian bird. Moquin-Tandon, in Webb and Berthelot's 'Orn. Canarienne,' gives a full description of the bird from the Canarian Seas, which he named *Thalassidroma hypoleuca.* It differs from *P. m. marina* (Latham) in its uniform lighter colouring on the upper parts, especially on the mantle ; but particularly in the size of the bill, which is much longer.

From the very few records from its breeding-haunts available for comparison, it appears that *P. m. hypoleuca* breeds in the northern limits of its breeding range at the end of April, while in its southern limit (the Cape Verde Group) it commences laying early in March.

Range in the Azores.

P. m. hypoleuca is evidently only a very rare straggler to these islands, as we have only one authentic record of its having been seen there. This is a skin in the Ponta Delgada Museum which was identified by Mr. Ogilvie-Grant.

Range in the Madeira Group.

Very few records are forthcoming of this Petrel being found in the Madeira Group, which, considering the near proximity of the Salvage Islands, is somewhat extraordinary, and only tends to show how small is the circumference of its range. Padre Schmitz's notes establish this Petrel as a visitor only, to Madeira itself. He records a female which, on the 19th of February, 1908, was driven to the neighbourhood of Madeira in a sandstorm that darkened the sun ; the bird fell exhausted on the deck of a steamer. Canon Tristram observed the North Atlantic Frigate-Petrel near Madeira, and Bolle met with it during a voyage from Lisbon to Madeira.

Breeding range in the Salvage Islands.

Mr. Ogilvie-Grant found this Petrel breeding in large colonies on Great Salvage Island between the 24th and 29th of April. He notes that on April 27 the most advanced eggs were only half incubated. No young birds were obtained. Many adults and 22 eggs were collected, which are now in the British Museum. Mr. Grant was informed by the pilot of his tug that numbers of these birds breed on the Little Piton.

Dr. P. R. Lowe mentions that the Salvage Islands have been visited by ornithologists in April, May, and October, and confirms Mr. Grant's statement that the end of April is the breeding-season of *P. m. hypoleuca.*

Canon Tristram saw numbers of these Petrels on March 17 when twenty miles east of the Salvages.

Range in the Canary Islands.

The records of this Petrel being taken in the Canary Islands are not by any means numerous, although this is the type locality of *P. m. hypoleuca,* the shores of Tenerife being given as the habitat of this Petrel in Webb, Berthelot and Moquin-Tandon's work 'Ornithologie Canarienne.' Drouet mentions it from the Canaries. Meade-Waldo found this Petrel to be "not common," and noted that some were caught by the fishermen every spring. Savile Reid records an example which was brought to him alive in Tenerife on the 20th of March. Captain Shelley, who identified this specimen, informed him that it had already been obtained "once or twice" in the Canarian Archipelago. I have not met with it myself in the Canary Islands. The only two Canarian examples in the National Collection were obtained, one by Meade-Waldo in Tenerife, 20. v. 89, and the other by Savile Reid, which is the specimen mentioned above. Cabrera had a specimen in his collection procured at Tegina on the coast of Tenerife. Bolle never met with it on any of his frequent journeys amongst the islands, although he is erroneously quoted as having done so. On the other hand, Bolle himself quotes Berthelot as saying that he had observed *Thalassidroma hypoleuca* constantly all around the waters of the Canary Islands. There is no evidence of its ever having bred in the Archipelago.

Breeding range in the Cape Verde Islands.

Breeds on one of the Rombos Islands and on Branca.

This species was found breeding in the Cape Verde Islands by Boyd Alexander, and since his expedition in 1897 we have received no further details concerning its distribution in the islands. Alexander discovered it first on the small island of Cima in the Rombos Group, where he landed on the 15th of March, 1897. He found it breeding in considerable numbers, the eggs being in an advanced stage of incubation. Many birds and eggs were obtained which are now in the British Museum Collection. Apparently the bird does not resort to the largest island of the Rombos Group to breed, as Alexander did not find a single bird on this island. It is not found on the island of Brava. The skins in the National Collection labelled "Brava, Rombos Is., March '97," were all collected on the Rombos Islands and not on Brava, as can be seen by consulting the report of the expedition ('Ibis,' 1898). Brava is not, strictly speaking, a member of the Rombos Group.

The next island upon which Alexander discovered this Frigate-Petrel was Branca, situated a considerable distance from the Rombos Islands, which he visited during the first week in May. He discovered that all the birds had young but did not obtain any eggs. The birds probably commenced breeding at the same time as those of the Rombos Island colony.

In Bocage's paper on the birds of the Cape Verde Islands, merely quotes Alexander. Salvadori does not mention the species in his report of the Fea Collection, while Fea himself mentions it in his geographical report as not breeding on Cima Island, during his visit in August and September.

6. **Puffinus gravis.** Great Shearwater.

Type locality—Greenland.

Procellaria gravis O'Reilly, Voy. Greenland, 1818, p. 140.

Puffinus major Faber; Hartwig, Orn. Monatsber. 1893, p. 45.

Puffinus gravis (O'Reilly); Godman, Monograph of Petrels, p. 90, pl. 25.

Range in the North Atlantic Islands.

Accidental straggler to Madeira and Canary Islands.

Range beyond the North Atlantic Islands.

Said to breed in the Tristan da Cunha Group, and has a wide distribution over the Atlantic Ocean.

Record of occurrences in the North Atlantic Islands.

The only example of the Great Shearwater which has been actually taken in these seas was sent to Hartwig from Madeira by Padre Schmitz. This bird was pronounced to be *P. cinereus* by Hartwig in a letter sent to Schmitz, but Dr. Reichenow informs me that it is really referable to *P. gravis.* The specimen, which was recorded by Schmitz on the authority of Hartwig as *P. major*, is, I am also informed by Dr. Reichenow, not *P. major* but *P. kuhli* (probably *P. kuhli flavirostris*). It was obtained by a fisherman in the first half of December 1892 on the east point of the Island of Madeira, near Ponta S. Lourenço. It probably more often appears in these seas than is generally supposed, as it must pass close to the Atlantic islands on its way north. There should be no difficulty in recognising this Shearwater at sea from the countless hundreds of *P. k. flavirostris* by its distinct brown cap and by its much browner appearance. Although not generally recognised, *P. k. flavirostris* is a decidedly larger bird.

Cabrera particularly mentions this bird in his list of species found in the Canaries as well as "*Puffinus cinereus* Kuhl and *Puffinus anglorum* Kuhl." He says it is only found in company with these two species.

7. **Puffinus kuhli flavirostris** (Gould). Yellow-billed Atlantic Shearwater.

Type locality—Cape Seas, 36° 39′ S., 10° 3′ E.

Procellaria flavirostris Gould, Ann. & Mag. Nat. Hist. xiii. 1844, p. 365.

Puffinus kuhli (Boie); Godman, Monograph of Petrels, p. 94 (part.), pl. 26.

Breeding range in the North Atlantic Islands.

Azores, Madeira Group, Salvage Is., Canary Is.

Range beyond the North Atlantic Islands.

Probably has a wide range in the Atlantic Ocean. Replaced by allied races in the Mediterranean Seas and in the Cape Verde Islands; possibly also on the eastern American coast.

General Conclusions.

There does not appear to be much difference in the breeding-season of *Puffinus kuhli flavirostris* in the various groups of islands. The birds appear to arrive at the end of February or beginning of March in the neighbourhood of each separate breeding colony, and begin nesting at the end of May and beginning of June in all the islands. The birds leave the nesting colonies with their young at the end of October and beginning of November, and are absent about four months. As will be seen by the range given above, *P. k. flavirostris* breeds on almost every individual island in all the groups of the North Atlantic with the exception of the Cape Verde Group, where its place is taken by an allied race. It is undoubtedly the most numerous of all the Shearwaters and Petrels which inhabit this part of the North Atlantic Ocean.

Records connected with the Breeding and Distribution of *Puffinus kuhli flavirostris* in the North Atlantic Islands.

Feb.		Birds appear end of Feb. (Madeira): Schmitz.
March	4.	Very few birds arrived in breeding-haunts (Villa Islet, Sta. Maria, Azores): Ogilvie-Grant.
	19.	Hundreds of Shearwaters off Tenerife: Reid.
April	7.	Birds not yet arrived to breed (Graciosa, E. Canary Is.): Meade-Waldo.
	18.	Hundreds on the high seas (Madeira Group): Schmitz.
Mid-April.		Birds not yet arrived in breeding-holes (Flores, Azores): O.-Grant.
	24–29.	Birds paired, no eggs (Salvage Is.): O.-Grant. Birds probably arrive at breeding-haunts in April (Eastern Canary Islands): Bannerman.
May	4.	Birds paired, no eggs (Deserta Grande): O.-Grant.
	27–31.	Birds just commenced laying (Graciosa, E. Canary Is.): Bannerman.
	30.	About 12 birds sitting, many nesting places still empty (Cabras Is., Terceira, Azores): O.-Grant.
End of May.		Birds breeding (Azores): Godman.
June.		Almost all the eggs found this month (Madeira Group): Schmitz.
	1.	Large colony arrived, nearly all with fresh eggs (Villa Islet, Sta. Maria, Azores): O.-Grant.
	1–7.	Majority of birds have just laid (Graciosa, E. Canary Is.): Bannerman.
	7–14.	All birds sitting on fresh eggs (Montaña Clara Isl., E. Canary Is.): Bannerman.
	8–15.	Most favourable for finding eggs (Madeira Group): Schmitz.
	9–14.	All birds on fresh eggs, no young as yet (Allegranza, E. Canary Is.): Bannerman.
	20.	Eggs obtained (Anaga Rocks, Tenerife): Brit. Mus. Coll.
	23.	Many birds nesting, some of the birds sitting, some eggless (Baixo Is., Porto Santo): Schmitz.
July.		Young are hatched early in this month (E. Canary Is.): Bannerman.
Aug.	5.	Fishermen commence collecting Pardelás, which are then said to be well-grown (E. Canary Is.): Bannerman.
Sept.	1.	Latest date on which bird-in-down found between 1895–1899 (Madeira Group): Schmitz. Down-covered young taken (Porto Santo): Schmitz.
	15.	Adults obtained (Gran Canaria): Nicoll.

Oct.	1–31.	Many birds at sea (Gran Canaria): Bannerman.
	17.	Two down-covered young (Porto Santo): Schmitz.
	28.	Twenty-one birds found (Cape S. Lourenço, Madeira): Schmitz.
End of Oct.		Birds disappear (Madeira Group): Schmitz.
Nov.	1–15.	Many birds frequent Confital Bay (Gran Canaria): Bannerman.
	17.	Last date birds seen (Gran Canaria): Bannerman.
	25.	Many seen on the water in flocks off Gran Canaria: Lowe.
		All birds said to leave this month (E. Canary Is.): Bannerman. All birds have left the Madeira Group: Schmitz.

Breeding range in the Azores.

Mentioned by every writer from Drouet onwards who has ever studied the avifauna of this group. According to the various accounts *P. k. flavirostris* breeds on all the islands and is particularly numerous in the central group. Apparently the birds only begin to arrive at their breeding haunts early in March, and even as late as May 30 there are many nesting-places still empty. Godman, however, found the birds breeding at the end of May. It would seem that the various colonies do not all commence nesting-operations at the same time. By the middle of June all the birds have laid. Mr. Ogilvie-Grant's account of these birds in the Azores is by far the best published, but he had, unfortunately, left the island before the young were hatched.

Breeding range in the Madeira Group.

Breeds on all the islands and rocks of this group. Particularly abundant on the Desertas and the island of Porto Santo.

They appear in Madeira at the end of February and beginning of March, and although hundreds are seen at sea in the neighbourhood of the islands throughout April, they do not seem to commence laying in this month. By May 4 many birds are paired, and doubtless a few early layers are to be found soon after this date. Padre Schmitz considers the middle of June the best season for finding their eggs, although on the 23rd of this month some of the birds on Baixo Is. were found to have not yet laid. Nesting continues through July and August, and Padre Schmitz has a note that he obtained young-in-down as late as October 17—an exceptionally late record. At the end of October the birds disappear from the Madeira Group until the end of February.

Breeding range in the Salvage Islands.

This is the particular home of the Yellow-billed Shearwater, which constitutes the chief wealth of these uninhabited rocky islets. According to Padre Schmitz over 20,000 of these unfortunate birds used to be taken year after year on the Salvages, the men employed in this industry leaving Madeira about the first week in September and returning with their spoils at the end of November. Of recent years the numbers have diminished by a few thousand, but enormous quantities, I understand, are still taken annually. Berthelot in 1841 and Bolle in 1857 give the catch as 30,000 in a good year, while in 1903 the numbers had dropped to 17,000 according to Schmitz. Mr. Ogilvie-Grant, who spent six days there from April 24–29, found the birds all paired, but not a single egg was discovered. The breeding-time is given by Schmitz as May, June, and July; by the end of May the majority have laid. Incubation lasts just four weeks more or less, but long before the eggs are laid the old birds are busy about their nest-holes.

Breeding range in the Canary Islands.

This species is by far the commonest of the Petrel family in the Canary Islands. It probably breeds on all the islands, but particularly on the outlying eastern islets of Lobos, Graciosa, Montaña Clara, and the East and West Rocks. I have paid particular attention to the habits of this Shearwater in the Canary Islands and published the results in 'The Ibis,' 1912, p. 574; 1914, pp. 66–70; and Bull. B. O. C. xxxiii. 1913, pp. 56, 57.

Other well-known breeding-places in the islands are Gran Canaria and the Anaga Rocks, off Tenerife.

The main body of *Puffinus k. flavirostris* arrives in the vicinity of the Canary Islands at the beginning of March; Savile Reid noticed many hundreds, off Tenerife, on the 19th of this month. A short itinerary of my recent expedition in May and June of last year (1913) will show the results arrived at:—

Isla Graciosa, May 27-31. Birds all paired in nesting-holes, but no eggs.
" June 1–7. Birds just beginning to lay.
Montaña Clara, June 7–14. Birds all have eggs.
West Rock, June 11. Every bird sitting on an egg.
Allegranza, June 9–14. Birds all sitting; eggs perfectly fresh.

As already noted, the majority of the birds arrive in the group at the beginning of March, but Meade-Waldo, who visited Graciosa on the 6th of April, reports that the Shearwaters had not yet arrived in their breeding-holes. They frequent their nesting-holes, as the fishermen say, "to clean them" during the latter part of April and beginning of May, but no eggs are laid, at the earliest, until the end of the latter month. By the second week in June nesting seems to be in full swing and continues through July, when the young are hatched. The fishermen start taking them on August 5th, when they are said to be very good to eat. In September many more are taken and boiled down for oil. I was told that all the large Shearwaters left the islands in November. Dr. Bolle thought that they left earlier, but I have myself seen many in Gran Canaria between November the 1st and 17th. The main body certainly goes out to sea at this time and the birds are not in any numbers near the islands between the end of November and the end of February, although a few may often be seen during December and January.

8. **Puffinus kuhli edwardsi.** Cape Verde Island Shearwater.

Type locality—Branca, C. V. Is.

Puffinus edwardsi Oustalet, Ann. Sci. Nat. (6) xvi. 1883, Art. v. p. 1.

Puffinus mariæ Boyd Alexander, Ibis, 1898, pp. 92, 108, 109.

Breeding range in the North Atlantic Islands.

Cape Verde Archipelago.

Range beyond the North Atlantic Islands.

There are no records of *P. k. edwardsi* having been taken outside the Cape Verde Group of islands.

Range in the Cape Verde Islands.

Branca, Brava, Raza, St. Vincent.

P. k. edwardsi was originally described by Oustalet from the island of Branca; since then it has been found on Brava and Raza by Boyd Alexander as well as on the first-mentioned island.

Recently I have received an adult male which was captured in Salamança Bay, St. Vincent, on the 27th of October, 1913. I have not been able to discover whether this Shearwater breeds on St. Vincent. Probably it does not.

The only islands upon which *P. k. edwardsi* has actually been found nesting are the islands of Brava and Raza, which, as Boyd Alexander remarks, may be considered the true home of this species. It doubtless will also be discovered breeding on Branca.

The first eggs are laid in September, as far as we know.

Alexander, in his list of the Birds of Brava, wrote that "On March 7th, while in the vicinity of the harbour, two boys brought us four specimens of this new Shearwater. They had obtained them from the holes of a rock out at sea and along the coast. We also noticed a few individuals on our way to Rombos Islands flying over the water, but to our surprise none inhabited the rocks of these islands. They appear to confine their habitat to the Brava coast. We met with this species again on Raza, where it is much more numerous." The four specimens obtained on Brava are in the British Museum.

Leonardo Fea, who visited Brava in July and August 1898, obtained specimens of *P. k. edwardsi* on the northern coast of this island and on the outlying rocks. All were adults and are described by Count Salvadori (Ann. Mus. Civ. Genova, vol. xx. 1899, p. 302).

On April 28 Alexander visited the island of Raza for the first time, where he found these Shearwaters in holes under boulders and in hollows in the cliffs; the birds were then paired, sitting in their holes in couples. Apparently they had not yet commenced laying as no eggs were obtained, although Alexander appears to have been on the island until the first week in May. After leaving Raza the neighbouring island of Branca was visited by the expedition. Alexander notes that *P. k. edwardsi* also inhabits this island, although he does not appear to have obtained specimens from there. On October 7 of the same year (1897) Boyd Alexander again visited Raza and found that *P. k. edwardsi* had young; he then remained two weeks on this island and reports that the eggs are laid in September. During this latter visit 3000 of these Shearwaters were captured by the fishermen and prepared for food.

9. **Puffinus puffinus puffinus** (Brünn.). Manx Shearwater.

Type locality—Faroes.

Procellaria puffinus Brünnich, Orn. Bor. 1764, p. 29.
Nectris anglorum Kuhl, Beitr. Zool. 1820, p. 146.
Puffinus arcticus Faber, Prodr. Isl. Orn. 1822, p. 156.
Puffinus anglorum (Kuhl); Godman, Monograph of Petrels, p. 104, pl. 28.

Breeding range in the North Atlantic Islands.

Azores, Madeira Group, Salvages and Canary Islands (very doubtful).

Breeding range beyond the North Atlantic Islands.

Islands off the coast of Great Britain.

For accidental wanderings see Godman's 'Monograph of Petrels.'

General Conclusions.

A glance at the following records will show that this Shearwater is not by any means universally distributed amongst the several groups of islands. In fact its breeding range is probably quite local. In the Azores we find that it is decidedly a rare, though probably a regular, breeding bird. In the Madeira Group it breeds on all the large islands, and this may be considered its stronghold in the north Atlantic. Records from the Salvages are not by any means satisfactory, nor are those from the Canary Group, while in the Cape Verde Islands this bird is altogether absent.

Puffinus p. puffinus leaves the islands during the winter months—departing in October or November and returning again at the end of February or early in March. The breeding season commences almost at once and continues until August, which is the latest month in which young-in-down have been taken. May and June are evidently the principal breeding months.

Records connected with the Distribution and Breeding-habits of *Puffinus p. puffinus* in the North Atlantic Islands.

Jan.		Birds not seen during this month (Madeira Group): Schmitz.
Feb.		Birds are not seen from beginning of November until end of this month (Madeira Group): Schmitz.
March	1–15.	Birds several times heard flying over from the sea to the mountain (Madeira): Schmitz. Eggs that have been found from 1890–1899 all date from the end of March (Madeira Group): Schmitz.
	14.	Two adults received, 2 eggs also taken (Madeira): Schmitz.
	15.	Adult on shore, Orotava (Tenerife): Reid.
	19.	Hundreds of Manx Shearwaters off Orotava (Tenerife): Reid.
	1–31.	None seen during expedition (Azores): O.-Grant.
April	6.	Downy-young obtained (Desertas): Schmitz.
	23.	Two adults from Curral (Madeira): Schmitz.
	24–29.	None seen in the (Salvages): O.-Grant.
	1–30.	None seen during expedition (Azores): O.-Grant.
April.		Bird obtained (Santa Maria, Azores): skin in Brit. Mus.

May	3.	Downy young obtained (Porto Santo): Schmitz.
	5.	Downy young obtained (Desertas): Schmitz.
	No date.	Two birds obtained, female contained eggs in advanced stage (Flores, Azores): Godman.
	15.	Many off Garachico (Tenerife); Meade-Waldo.
	1–31.	None seen during expedition (Azores): O.-Grant.
		Fairly numerous, apparently breeding (Azores): Godman.
June	4.	Downy-young obtained from the Curral (Madeira): Schmitz.
	22.	Two adult and two juvs. obtained 1000 metres above sea-level (Madeira): Schmitz.
	23.	Numbers of eggs seen, 11 taken, all fresh (Baixo Isl. off Porto Santo): Schmitz. Three young obtained in the Curral (Madeira): Schmitz.
June.		Seen in considerable numbers (Desertas): Godman.
		Bird obtained (Tenerife, W. Canary Is.): Gomez.
July	4.	Downy young found (Curral, Madeira): Schmitz.
	7.	Almost adult bird-of-the-year obtained from Curral (Madeira): Schmitz.
	15.	Bird caught (Desertas): Schmitz.
	16.	Bird obtained Curral (Madeira): Schmitz.
Aug.	11 & 12.	Downy young obtained (Desertas): Schmitz.
	11.	Downy young bird well advanced (Madeira Group): Schmitz.
Nov.		Birds are not seen from beginning of this month till end of February (Madeira Group): Schmitz.
Dec.		Birds not seen during this month (Madeira Group): Schmitz.

Breeding range in the Azores.

Reports of the Manx Shearwater in the Azores are somewhat conflicting. Godman, who spent a considerable time in the group in 1865, procured two females containing eggs in an advanced stage at Flores in May; and he notes that this Shearwater was "not so numerous as *P. major*" (= *P. k. flavirostris*, which is exceedingly plentiful). When Ogilvie-Grant visited the Azores in 1903 he wrote, "though constantly on the look-out for it amongst the hosts of *P. k. flavirostris*, we never saw or procured a single specimen." Major Chaves, a resident in the islands well acquainted with the bird-life, considers it a rare visitor to the Azores. The earliest writers, Morelet and Bocage (1866), both mention this Petrel in their list of birds inhabiting the Azores, while Drouet does not refer to it. Simroth simply remarks that "*P. anglorum* brütet in Klippenhohlen." It is apparent from these accounts that *Puffinus p. puffinus* is found very sparingly in this Archipelago and that its distribution, even amongst the islands of the Azores, is very local, and possibly confined to the extreme western group.

Breeding range in the Madeira Group.

Puffinus p. puffinus breeds on all the main islands of this group. According to Padre Schmitz the birds leave the islands in winter and are not seen from the beginning of November until the end of February. In March, then, they arrive, and the 14th of that month is the earliest record which I can find of eggs having been taken in Madeira, where it is interesting to note they breed in the Curral over 1000 metres above the level of the sea, as well as in several other localities in the interior of the island. The breeding-season appears to be at its height in Madeira, on the Desertas and in Porto Santo, during the month of June, while young-in-down have been obtained as late as the 11th and 12th of August, but it must be noted that in this case Padre Schmitz believes the birds to be the product of a second brood. Perhaps the first eggs had been taken. July seems to be the end of the breeding-season from the records available.

Apparently the birds remain in the neighbourhood in September, but all disappear at the end of October until the following spring.

Breeding range in the Salvage Islands.

The evidence that *Puffinus p. puffinus* occurs regularly in this group is very meagre, and rests on the report of a former owner of these rocky islets. This gentleman assured Padre Schmitz that the Manx Shearwater bred on the Salvages. Ogilvie-Grant did not meet with any of this species during his visit from 24–29 April 1895.

Breeding range in the Canary Islands.

I consider it very doubtful whether this Shearwater breeds at the present day in the Canary Islands. All the evidence which I can gather on this score is decidedly in the *negative.* The first evidence of its occurrence in the Canary Islands is given by Webb, Berthelot, and Moquin-Tandon in their historical work 'Ornithologie Canarienne.' These authorities give as its habitat "Dans l'île déserte d'Alegranza," and in an observation say "Des mariniers de Lancerotte nous rapportèrent cette espèce vivante, prise dans l'île d'Alegranza, où elle habite toute l'année." Bolle, writing in 1854, includes the species as an inhabitant of Allegranza, but in 1857, after he had he apparently paid a visit to the island himself, he omits it from his final list. Savile Reid saw hundreds of *P. puffinus* on the sea off Tenerife on the 19th of March, 1887. Floericke, writing in 1905, makes the astounding statement that "*P. anglorum* is the form most numerous on the sandy eastern islands. . . . . It breeds most frequently on the Desertas." This statement is absolutely incorrect—in fact, I do not believe Floericke can have ever set foot either on the Desertas or eastern islands, at any rate at the time the Petrels were breeding. It is a thousand pities that such misleading statements are published. Unfortunately, Polatzek, a careful and reliable observer, in 1908 quotes Floericke's notes on this species. Meade-Waldo considered that it did not come to land but was sometimes common on the water in winter.

Dr. Le Roi has been good enough to inform me that there is an adult bird of this species from Tenerife in the Museum Koenig at Bonn, but without any further data attached. The bird which Dr. Koenig speaks of (J. f. O. 1890, p. 462) from Palma no longer exists in the museum, but was destroyed some time ago; it was presented to Dr. Koenig and said to have been obtained at Palma.

My strongest reason for considering that *Puffinus p. puffinus* does not nest at the present day on any of the Canary Islands, is that I have myself spent a considerable time in the islands, and have never once seen this Shearwater in the summer months. Moreover, I have remained in the eastern group in May and June, and during my last expedition the islands of Allegranza, Montaña Clara, and Graciosa were thoroughly explored, living as we did in tents on each island in the midst of hundreds of Petrels. During this trip, at a time when *P. p. puffinus* is usually breeding, we did not see or hear of a single example, although specially on the look-out for it, particularly on Allegranza.

10. **Puffinus assimilis baroli.** Atlantic Allied Shearwater.

Type locality—Desertas, near Madeira.

Puffinus baroli Bonaparte, Consp. Gen. Av. 1856, p. 204.

Puffinus godmani Allen, Auk, 1908, p. 339.

Puffinus obscurus atlanticus Rothschild & Hartert, Bull. B.O.C. xxvii. 1911, p. 43.

Puffinus bailloni Bonap.; Godman, Monograph of Petrels, p. 138.

Puffinus assimilis baroli Bonap.; Bannerman, Ibis, 1914, p. 264.

Breeding range in the North Atlantic Islands.

? Azores, Madeira Group, Salvage Is., Canary Is.

Range beyond the North Atlantic Islands.

Confined to the islands mentioned above. Represented by allied forms in several widely separated localities in the Pacific and Indian Oceans.

As considerable confusion has taken place in the past with regard to the correct name to be used for this Shearwater, I have gone very carefully into the matter and have given a detailed review of the nomenclature employed by former writers on this bird, in 'The Ibis,' 1914, pp. 264–266.

P. assimilis baroli is the only form of the *P. assimilis*-group of Shearwaters which is found beyond the Pacific or Indian Oceans, and the reason why it is so far removed geographically from the other members of this blue-backed group is certainly a very difficult point to determine.

I have already touched on this question in the early part of my paper, and shown that the geographical distribution of the Tubinares—even in the comparatively small area embraced by this paper—is probably the most imperfectly understood of all the genera of birds.

The *P. assimilis*-group of Shearwaters is distinguished from the *P. lherminieri*-group by the following characters:—In the first place the upper parts are slaty-blue-black (not brown), the bill is comparatively shorter, and the wing much shorter; while both the inner web of the primary quills and the under tail-coverts are mostly white. Mr. Mathews has treated very fully this question in his 'Birds of Australia,' vol. ii., and I strongly recommend anyone working on this difficult group to consult his exhaustive work.

I have in the following pages discussed at some length, under the heading of the separate groups of islands, the breeding-season of this Shearwater. It will be seen that there is considerable diversity with regard to the nesting-time of this species, not only amongst the various groups but often amongst the individual islands of one group. For this reason I have not "summed up" the conclusions at which I have arrived, as I am by no means certain that there is sufficient data available to form any definite opinion on this vexed question.

Records of the Distribution and Breeding-habits of *Puffinus assimilis baroli* in the North Atlantic Islands.

Jan. 17. Birds observed for the first time this year (Madeira Group): Schmitz.

Feb. 9. Several birds received and a few eggs collected, for the most part fresh (Porto Santo): Schmitz.

10. Many eggs received, none much incubated (Porto Santo): Schmitz.

13. Four more eggs obtained (Porto Santo): Schmitz.

15. Seventeen eggs obtained, nearly all fresh (Island off Porto Santo): Schmitz.

20. Obtained a fine series of perfectly fresh eggs (Madeira Group): Schmitz.

Feb. 27. Three birds collected (Porto Santo): Schmitz

29. Seven adult birds caught on their eggs (Madeira Group): Schmitz.

No date. An adult bird taken (Orotava, Tenerife): Webb & Berthelot.

End. Breeds at this time (Canary Group): Meade-Waldo.

Mar. Beginning. Breeds (Canary Group): Meade-Waldo.

15. Adult bird on shore (Orotava, Tenerife): Reid.

16. Adult with young just hatched (Tenerife): Meade-Waldo.

17. One egg received, probably from a late brood (Porto Santo): Schmitz.

Very unusual to find a fresh egg in this month (Madeira Group): Schmitz *.

April 3. Egg taken (Tenerife): Meade-Waldo.

6. Birds not yet breeding (Graciosa, Canary Is.): Meade-Waldo.

10. Obtained 6 down-covered young, of which one may be three days old, two ten days, and three fifteen days old (Porto Santo): Schmitz.

11. Young just hatched and nestlings a few days old (Porto Santo): O.-Grant.

26. One adult obtained (Praya Isl., Graciosa, Azores): O.-Grant.

Young-in-down taken (Orotava, Tenerife): Meade-Waldo.

24–29. Many downy young in various stages and one fresh egg (Great Salvage): O.-Grant.

May 3. Received a fine down-covered young (Madeira Group): Schmitz.

4. Adult birds obtained, not yet breeding (Deserta Grande): O.-Grant. 1890.

4. Birds have bred, some of the young in almost adult plumage (Porto Santo): O.-Grant. 1890.

5. Egg received from Desertas: Schmitz.

7. Nestlings and adult birds of the year found (Porto Santo): O.-Grant.

15. Many seen off Garachico (Tenerife): Meade-Waldo.

20. A down-covered young caught (Fera Isl., Madeira Group): Schmitz.

27–31. Birds bred and left the island (Graciosa, Canary Is.): Bannerman.

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* This last record is a very old one, 1899; doubtless Padre Schmitz has changed his opinion since this was published.

June	1–7.	None seen on Graciosa, Canary Is.: Bannerman.
	7–14.	Ten young birds taken in every stage of plumage, from the downy nestling to the fully fledged bird; also two fresh eggs (Montaña Clara, Canary Is.): Bannerman.
June.		Considerable numbers seen (Desertas): Godman.
July	2.	One egg taken (Madeira Group): Schmitz.
	29.	A down-covered young obtained (Baixo Isl., Porto Santo): Schmitz.
Sept.	12.	Several living birds caught (Porto Santo): Schmitz.
Nov.	22.	Heard a number of birds round lighthouse (Cima Isl., Porto Santo): Schmitz.
Dec.	22.	A number of birds in cliffs (Cima Isl., Porto Santo): Schmitz.

Breeding range in the Azores.

The Atlantic Allied Shearwater was first recorded from the Azores by Godman, who, in 1865, when he visited the group, heard of it on the island of Flores. He notes that it had reared its young and gone again before he reached Flores, nor did he meet with it on any of the other islands. Godman arrived in this group on the 21st of March. This bird is said to arrive about the month of March and to breed in the cliffs, but it would appear to do so much earlier from Godman's experience. Bocage includes it in his list (1866), likewise Simroth (1888). It is curious that Ogilvie-Grant did not find *Puffinus a. baroli* breeding in the Azores, as he was in the group from February 26 till June 2 and visited all the islands. The only specimen which he obtained alive was an adult male caught on Praya Island, Graciosa, on the 26th of April. A skin of a bird in the Ponta Delgada Museum had been obtained from San Miguel. Major Chaves informed Ogilvie-Grant that this Shearwater was not uncommon in the Azores.

Breeding range in the Madeira Group.

The Atlantic Allied Shearwater breeds on all the islands of this group. According to an early account, given by Padre Schmitz, the birds disappear from the Desertas and

Porto Santo in the middle of the summer. He states in the same account that this is the only bird which breeds solely in winter, and that it is unusual to find a fresh egg in March, still more so in April. Padre Schmitz subsequently records young-in-down during the month of May, while several have also been taken in April, so that his views on this point have probably changed since he wrote in 1899. A study of the records on the appended schedule show that the majority of the birds probably do leave the islands during the height of the summer, although it is obvious that odd birds occasionally breed in the summer months, as the record on July 29 from Porto Santo testifies. Schmitz found the birds had arrived on Cima Island towards the end of November, but on one occasion (1900) he observes that the birds are seen for the first time on January 17. This is probably an unusually late date for their first appearance, November being much nearer the mark. Most of the birds appear to lay early in February, and by June the majority of young birds are fully fledged—the earliest record of an adult bird of the year seems to be May 7. Padre Schmitz has recorded an exceptionally late down-covered young from Baixo Isl. (Porto Santo) on July 29 ; by this date it is probable that the main body of adults and young of the year have left the islands not to return until November. *P. a. baroli* does not commence breeding simultaneously on the various islands of the Madeira Group, as Mr. Ogilvie-Grant has already clearly proved, for during his visit to Deserta Grande on May 4, 1890, he found that these Shearwaters had not yet bred, while at Porto Santo, which is only about forty miles distant, this species had not only bred but some of the young were in nearly adult plumage.

Breeding range in the Salvage Islands.

Mr. Ogilvie-Grant obtained downy young in various stages on Great Salvage between the 24th and 29th of April. Only one egg, almost fresh, was taken.

Breeding range in the Canary Islands.

P. a. baroli breeds on Tenerife, Gran Canaria, Montaña Clara, and in very small numbers on Graciosa. It is first mentioned by Webb & Berthelot, who record a bird from Orotava, Tenerife, taken in February 1829. Savile Reid mentions a bird picked up on the shore at Orotava, on the 15th of March. In Tenerife also Meade-Waldo obtained an adult bird on the 16th of March with the hatching-spot on its breast. It was said to have had a young one just out of the egg. An adult bird was taken on the 3rd of April sitting on an egg, and young birds-in-down on the 26th of April at Orotava. On the 15th of May many of these Shearwaters were seen off Garachico in company with other species.

Meade-Waldo visited the island of Graciosa on the 6th of April, but did not find any Petrels on the island at this time of year. Godman in the 'Monograph' states that Meade-Waldo found eggs of this species on Graciosa at the end of February and the beginning of March. This is not the case; Godman evidently misunderstood Meade-Waldo's account of his visit. Meade-Waldo states that this species breeds at the end of February and the beginning of March, but he is obviously referring to Tenerife, where the majority of his notes were made.

Meade-Waldo also found a pair breeding near Arucas in Gran Canaria. Polatzek records it from Tenerife and the small northern islets.

During my expedition last year (1913) I found that *Puffinus assimilis baroli* had almost finished breeding on Montaña Clara between the 7th and 14th of June. About ten birds were taken in every stage of plumage, from the fluffy nestling to the adult bird of the year, with a few filaments still adhering to the flanks. Only two eggs were procured, which, however, were almost fresh on the 8th of June. A complete account of this nesting colony is given in 'The Ibis,' 1914, p. 79. We did not find any sign of these birds on Allegranza at the same time of year, but during our ten days' stay on Graciosa, from May the 27th till June the 7th, a small but deserted colony was pointed out by the fishermen, who assured me that the birds had already bred and departed. They told me that these Shearwaters came in March and had left Graciosa before the end of May, but that I should still find a few on Montaña Clara; this, sure enough, turned out to be the case, for we had not been on this island a day before the fishermen brought me several birds, which is proof enough that they knew which species they were talking about!

From the few definite dates which we have, it appears that the bird breeds at different times on the different islands—February, March, and April being the usual months in Tenerife and perhaps on Graciosa, while, strange to say, on Montaña Clara, which is only distant from Graciosa about one-and-a-quarter miles, the birds seem to breed slightly later. This bears out my theory, already expressed, that the several nesting colonies breed quite independently of one another. There are no records of this bird being seen in the Canary Islands during the summer.

11. **Puffinus lherminieri boydi.** Boyd Alexander's Shearwater.

Type locality—Cape Verde Islands.

Puffinus lherminieri boydi Mathews, Birds of Australia, vol. ii. 1912, p. 70.

Puffinus assimilis Gould; Alexander, Ibis, 1898, p. 98.

Puffinus sp., Salvadori, Ann. Mus. Civ. Genova, vol. xx. 1899, p. 303.

Breeding range in the North Atlantic Islands.

Confined to the Cape Verde Islands.

Range beyond the North Atlantic Islands.

The extent of the range of this Shearwater beyond the Cape Verde Archipelago is not known. It probably does not wander very far. It is represented in the Bahamas, West Indies, and Bermudas, by typical *Puffinus lherminieri*

lherminieri and by allied forms in various localities in the Pacific and perhaps also in the Indian Ocean.

The Shearwater inhabiting the Cape Verde Islands has generally been united with the form inhabiting the other islands of the North-East Atlantic, which is now known as *Puffinus assimilis baroli* Bonap. Boyd Alexander, who obtained a fine series in the Cape Verde Group, considered them intermediate between *Puffinus assimilis assimilis* Gould and *Puffinus obscurus obscurus* (Gm.), but although he pointed out the existing differences, he finally united his birds with *Puffinus a. assimilis*, which was the name then used for the form inhabiting the Madeira and Great Salvage Groups. The following year the same problem was tackled by Salvadori, who rightly came to the conclusion that the species could not possibly be referred to *Puffinus assimilis assimilis*. He considered, however, that the Cape Verde Dusky Shearwater should be assigned either to *Puffinus auduboni* Finsch (=*P. l. lherminieri* Lesson), or to *Puffinus tenebrosus* Pelz., and inclined to the belief that the description of the latter species exactly fitted the bird from the Cape Verdes. In thinking that this Cape Verde race might be *P. auduboni* he came very near the mark. Recently, Messrs. Mathews and Iredale have gone into the question again, and the former has expressed his opinions in the 'Birds of Australia' and has named the Cape Verde bird *Puffinus lherminieri boydi*, considering it to be a subspecies of *Puffinus lherminieri lherminieri* Lesson. In this I absolutely concur. The *P. lherminieri*-group is characterised mainly by having the upper parts of a distinct brown shade (as opposed to the slaty-blue back of the *P. assimilis*-group), by the comparatively longer bill and much longer wing, by the under tail-coverts being mostly dark, and by the dark inner webs to the primary quills. A comparison of *P. lherminieri boydi* with *P. assimilis baroli* will fully bear out these remarks; there is little to choose in the length of the bill in these two particular subspecies with which we are dealing, although this character is said to hold good throughout the other members of the group.

Breeding range in the Cape Verde Islands.

Boyd Alexander's Shearwater breeds on Cima Island, in the Rombos Group, and on Branca, where Alexander found it in 1897. It inhabits, and probably also breeds on, the islands of St. Jago, Raza, and Fogo, where it was discovered by Fea (see account by Salvadori). Alexander obtained a series of birds and five eggs of this Shearwater on Cima Island on the 15th of March, while on Branca, which he left on May 5th, all the birds had young and numbers were seen at sea. Signor Fea obtained an adult male on St. Jago on the 21st of May, two males on the Rombos Islands on the 22nd of September, three birds, male and female, on Raza between the 31st of October and 4th of November, and a female on Fogo on the 10th of June. Count Salvadori does not, however, mention that Fea found it breeding on any of the islands mentioned from which specimens were obtained; Signor Fea wrote that his visit to the Rombos Is. was a failure and that none of the Petrels or Shearwaters were breeding.

12. **Œstrelata mollis feæ** Salvadori. Fea's Soft-plumaged Petrel.

Type locality—S. Nicolas, Cape Verde Islands.

Œstrelata feæ Salvadori, Ann. Mus. Civ. Genov. ser. 2, vol. xx. 1899, p. 305.

Œstrelata feæ Salvadori; Godman, Monograph of Petrels, p. 201.

Breeding range in the North Atlantic Islands.

Madeira Group (restricted locally), Cape Verde Islands.

Range beyond the North Atlantic Islands.

Not recorded as breeding anywhere but in above localities. Noted south to lat. 11° 10′ N., one day's sail from Sierra Leone. Replaced by the typical species, *Œ. mollis mollis*, in the south Atlantic, Pacific, and Indian Oceans.

Note.—I have not thought it necessary to include the complete synonymy of this Petrel in this paper. The bird has been mentioned by Harcourt, Dalgleish, Hartwig, Schmitz, and Ogilvie-Grant from the Madeira Group, and by Salvadori, Fea, and Boyd Alexander from the Cape Verde Islands. A short synonymy is given in Godman's 'Monograph,' p. 201.

General Conclusions.

Œstrelata mollis feæ is one of the most interesting, and certainly the most rare, of all the Tubinares inhabiting the North Atlantic Islands. For many years it was confounded with *Œstrelata m. mollis* Gould, but in 1899 Count Salvadori examined the specimens obtained by Signor Fea in the Cape Verde Islands, together with examples from the Madeira Group, and showed that this form differed strikingly from the typical species. It breeds only in the Madeira and Cape Verde Groups, and eggs and young have, up till the present, been taken only in the first named.

Breeding range in the Madeira Group.

This rare Petrel has been recorded as breeding in Madeira itself and on Bugio Island—one of the Deserta Group. The bird is also recorded from Porto Santo and the Ilho de Baixo in the same group. The following is a short summary of specimens and eggs which have been procured.

June	12, 1906.	Three adult birds and first perfect fresh egg taken from a rocky promontory in the highlands of the island (Madeira).
	13, ,,	Another bird procured at the same place (skin in Brit. Mus.).
	28, 1890.	A specimen obtained by Schmitz.
July	12, 1891.	A bird obtained by Schmitz.
	14, 1909.	Two young birds obtained from Curral das Freiras.
	18, 1903.	From the mountain range between S. Antonio and Curral, Schmitz obtained four living *O. feæ*, 2 ♂, 2 ♀. It transpired later that they had bred there.
Aug.	6, 1891.	Bird obtained by Schmitz.
	12, 1895.	Bird obtained by Schmitz.
Sept.	12, 1892.	Bird obtained by Schmitz.
	27, 1895.	Bird obtained by Schmitz.

Oct.	13, 1895.	Schmitz received another bird from Bugio Island, Desertas.
	14, 1894.	The first and only well-incubated egg received by Schmitz from Bugio Island, Desertas. There were two eggs obtained, but one was broken.

All the birds or eggs in the above list were procured by, or came into the possession of, Padre Schmitz, who has formed such an excellent Museum at Funchal.

Besides the specimens noted in this list there are two birds obtained by Dr. Frere in 1853, and now in the Museum of Cambridge. These are mentioned in 'The Ibis,' 1890, p. 386, by Mr. Dalgleish, who writes :—"In a small collection of skins lately received from Madeira I find a specimen which Mr. Salvin has identified as *Œ. mollis*. . . . This bird was taken on the Ilho de Baixo, off Porto Santo. . . . I understand that there are two specimens of the same bird in the Cambridge Museum, obtained some 35 years ago by Mr. Robert Frere near Madeira."

The record from Porto Santo is given by Godman in the 'Monograph of Petrels,' and apparently does not refer to Dalgleish's bird, as this is mentioned under Baixo Island.

Another record which I have not included in the summary has been communicated to me by Mr. P. R. Lowe, who examined, on the 24th of December, 1905, a specimen in down of this Fulmar as well as an egg in the collection of Padre Schmitz. Both had been procured on the island of Madeira itself. Mr. Lowe, unfortunately, has no note of the date upon which the egg and young had been taken, but it appears that this specimen has not been recorded in print.

I am not by any means certain that I have compiled a complete list of specimens of this bird taken in the Madeira Group, but it is interesting to note that all the records of this Fulmar having been seen in Madeiran waters date from the beginning of June until the end of October. There are very few notes of its breeding, but June and July seem to be the usual months in which the eggs are laid. One record on the 14th of October from the Desertas shows that the bird occasionally extends its nesting season, unless, for some reason, this was a second brood.

Breeding range in the Cape Verde Islands.

Fea's Soft-plumaged Petrel is even a rarer bird in the Cape Verde Group than it is in the Madeira Islands, and although no eggs or young have been taken, it must undoubtedly breed there. In this archipelago it is restricted to the islands of St. Nicholas and Fogo, where Fea discovered it living on the former island "always at an altitude of 500 metres." This same traveller says it is to be found also on Fogo, *vide* Salvadori (Ann. Mus. Civ. Genov. ser. 2, vol. xx. 1899, p. 305). I gather from Fea's own account that he did not himself meet with the bird on Fogo, but constantly heard it spoken of by the natives of this island. Boyd Alexander did not come across this Petrel during his expeditions in 1897, but I have found an interesting note referring to this species in one of his private diaries, which I have been privileged to read. Under the date May 27th, while on a voyage down the west coast, he writes:—"Lat. 11° 10′ N. 'Black' Petrels still following in numbers, this afternoon great numbers of Shearwaters (*Œstrelata mollis*) suddenly appeared, they kept circling low over the water, soon all were left behind. . . . . . May 28th. Arrived Sierra Leone." This entry is of particular interest, as it is the most southerly point that *O. m. feæ* has been noted, and is, moreover, the only occasion on which the bird has been seen in the month of May.

13. **Bulweria bulweri.** Bulwer's Petrel.

Type locality—Madeira Group.

Procellaria bulwerii Jardine & Selby, Illustr. Orn. ii. 1828, pl. 65.

Procellaria anjinho Heineken, Brewster's Edin. Journ. Sci. new series, i. 1829, p. 231: Madeira Group.

Puffinus columbinus Webb, Berthelot et Moquin-Tandon, Orn. Canarienne, 1841, p. 44: Canary Group.

Bulweria bulweri (Jard. & Selby); Godman, Monograph of Petrels, p. 257, pl. 74.

Breeding range in the North Atlantic Islands[*].

? Azores, Madeira Group, Salvage Is., Canary Is.

Breeding range beyond the North Atlantic Islands.

Pacific Ocean, Hawaiian Is. (French Frigate Isl., Laysan, Necker Isl., Bird Isl.).

For accidental wanderings and other probable breeding stations, see Godman's 'Monograph of Petrels.'

General Conclusions.

Bulweria bulweri breeds in the Pacific as well as in the north Atlantic Ocean. In the Pacific it appears to be confined chiefly to the Hawaiian Islands, another case of somewhat remarkable distribution.

It will be seen by glancing at the appended schedule that Bulwer's Petrel is not found inhabiting the north Atlantic Islands throughout the year. It appears to arrive at the earliest date in March and April, more commonly in May, and to commence laying early in June, but this varies considerably in the different groups of islands. The majority depart at the end of September.

Records of the Distribution and Breeding-habits of *Bulweria bulweri* in the North Atlantic Islands.

Jan. & Feb.		No records from any of the N. Atlantic Islands.
March.		Said to arrive during this month in the Madeira Group: Heineken. None seen in the Azores by Ogilvie-Grant.
April	24–25.	Adults (Great Salvage).
	29.	Not yet laying (Salvage Is.): O.-Grant.
	1–29.	None seen (Azores): O.-Grant.

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[*] Bocage records one example from Raza. The first and only record from the Cape Verde Islands.

May 3. Birds arrived exceptionally early (Porto Santo): Schmitz.
4. Adults not yet begun to breed (Deserta Grande): O.-Grant.
4. Many birds arrived (Deserta Grande): Schmitz.
4 & 7. Adults obtained (Porto Santo): Schmitz.
15. Many seen off Garachico (Tenerife): Meade-Waldo.
25. Adults obtained (Porto Santo): Schmitz.
1–29. None were seen between these dates (Azores): O.-Grant.
May and the beginning of June are the most favourable months for finding the eggs of *B. bulweri* (Madeira Group): Schmitz.
June 7–14. Large numbers breeding, all with fresh eggs (Montaña Clara, E. Canary Is.): Bannerman.
12. One egg (Tenerife, W. Canary Is.): Gomez.
14. Bird caught on egg (Tenerife, W. Canary Is.): Meade-Waldo.
14. Two adults obtained (S. Lourenco, Madeira): Schmitz.
15. Two eggs (Desertas): Schmitz.
18. Adults obtained (Tenerife, W. Canary Is.): Gomez.
20. Eggs (Anaga Rocks, off Tenerife, W. Canary Is.): Crowley Bequest to Brit. Mus.
20. Adults obtained (Madeira): Jardine.
20. Two adults and one young-in-down (Tenerife, W. Canary Is.): Gomez.
21. Adults obtained (Tenerife, W. Canary Is.): Gomez.
22. Two eggs obtained (Porto Santo): Schmitz.
23. Nine eggs obtained (Baixo Isl., Porto Santo): Schmitz.
25. Three adults obtained (Tenerife, W. Canary Is.): Meade-Waldo.
26. One egg obtained (Porto da Cruz, Madeira): Schmitz.
July 2. Eggs much incubated (Madeira Group): Schmitz.
Mid-July. Down-covered young may be met with (Madeira Group): Schmitz.
(No date). Eggs taken (Desertas): Frere.
(No date). One egg obtained (Desertas): *Ex* Tristram Coll.
(No date). One egg obtained (Desertas): Brown.
Aug. 4. The first down-covered young collected (Porto Santo): Schmitz.
25. A down-covered young caught in harbour (Funchal, Madeira): Schmitz.
Sept. 1. Down-covered young obtained (Porto Santo): Schmitz.
12. A down-covered young (Porto Santo): Schmitz.

Mid-Sept.		Down-covered young may be met with (Madeira Group): Schmitz.
Sept.	24.	Many birds seen (Deserta Grande): Schmitz.
Nov.		All *B. bulweri* departed (Madeira Group): Schmitz.

Breeding range in the Azores.

We have very little knowledge of *Bulweria bulweri* in the "Western Islands," as this group used commonly to be called.

The first occasion upon which *B. bulweri* was mentioned by old writers on this group was by Drouet, who remarked that it was an accidental visitor to Flores and Corvo (*cf.* Hartert, Nov. Zool. vol. xii. p. 97).

The most definite assertion that Bulwer's Petrel breeds in the Archipelago is made by Dr. Bolle in two papers on the Birds of the Canary Is. (J. f. O. 1855 & 1857). In these Bolle writes, "The native land of *B. bulweri* appears to be the Azores." At the time of writing he took it for granted that *B. bulweri* and *Puffinus columbinus* Berth. were distinct species, for he goes on to say, "Whether it (*B. bulweri*) or *columbinus* (so abundant in Corvo, and from which the inhabitants obtain such a good oil) belongs to the Azores is not known." Corvo is one of the smallest islands of the Azores, and is in the western group of the Archipelago.

Mr. Grant, who visited all the islands between February 26th and June 2nd, did not meet with it, which is not surprising as he only spent one day, April 14th, on Corvo, on which date the birds would not have arrived; neither is it mentioned by Godman, who, some years earlier, remained in the group from March 21st and explored all the islands.

In the National Collection there are are two skins of adult birds labelled "Madeira/Azores, Dr. Frere," presumably obtained at sea between the said groups. The absence of further details concerning this species in the Azores only exemplifies the necessity of further research in those islands.

Breeding range in the Madeira Group.

Madeira with its accompanying islands is the true home of Bulwer's Petrel, which breeds, according to that excellent observer, Padre Schmitz, and many other ornithologists, on every member of the group.

The bird was originally described in 1828 by Jardine & Selby from one of the islands of the Madeira Group—the following year Heineken named the same species *Procellaria anjinho* and gave an account of the bird in 'Brewster's Journal.' In this he states that Bulwer's Petrel arrives in this group in February and March. In June it begins to lay, and in July the young are hatched, while none are seen after September until the following year.

Padre Schmitz apparently does not agree that the bird arrives as early as February, for on May 23, 1907, he writes in his diary, "From Porto Santo I receive exceptionally early *B. bulweri*, which does not arrive, as a rule, until the end of the breeding-season of *P. o. bailloni* (=*P. a. baroli*), which is not yet over"*.

Harcourt found it very numerous on the Deserta Islands; Ogilvie-Grant caught a number of adult birds on Deserta Grande on May 4, but they had not yet begun to breed. Godman found "considerable numbers breeding on the Small Deserta" in June, but does not record the actual date of his visit.

We may safely assert that Bulwer's Petrel usually makes its appearance in the Madeira Seas early in May and apparently commences at once to breed. During June nesting is in full swing, and in July many young-in-down may be found. The season continues through August and into September, after which month the birds apparently disappear until the following spring.

Breeding range in the Salvage Islands.

Mr. Ogilvie-Grant was too early in his visit to these islands (from the 24th to the 29th of April) to find the eggs of this Petrel. The birds, however, had arrived on Great Salvage, and many were captured every night. They probably breed there in May and June, as is the case in the Madeira

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* The majority of *P. a. baroli* have finished breeding in the Madeira Group by the middle of May. [D. A. B.]

Group. Padre Schmitz included the species as breeding on this group as early as 1893 on the authority of the owner of the island, at that time Senhor Constantino de Noronha. Mr. Jourdain has kindly called my attention to an apparently very late date when eggs were obtained on the Salvage Group, *i.e.* Oct. 23. Padre Schmitz recorded these eggs in the 'Zeitschrift für Oologie,' xvii. p. 55. The eggs were brought to him on October 23 by fishermen, who had taken them on the Salvages during the men's stay on that island. As far as I can see, these eggs may have been laid any time within three months of the date upon which the boat returned! The men who make these expeditions to the Salvage Group in search of Shearwaters always remain on the island a considerable time. All the eggs were addled, and I do not believe for a moment that they had been laid in October. Oologists must be careful not to include this as a date when fresh eggs of *B. bulweri* have been obtained.

Breeding range in the Canary Islands.

Bulwer's Petrel breeds commonly in this group, where it arrives in the spring and departs again in the autumn. Webb and Berthelot, and also Dr. Bolle, who quotes a conversation with Berthelot, say that it was very common in Allegranza. During my last expedition to the outlying islets of the eastern group, we did not meet with any *Bulweria bulweri* on Allegranza in June; however, on the neighbouring island of Montaña Clara it was exceedingly numerous (*vide* 'Ibis,' 1914, pp. 80 & 268).

In Tenerife it arrives in May, and on the 15th of that month Meade-Waldo saw many off Garachico. Savile Reid did not meet with any amongst the other Petrels and Shearwaters which he noted between the 1st of February and the middle of April. Bulwer's Petrel is entirely a night-flying species during the breeding-season, and hence may easily escape observation. It breeds on the Anaga Rocks off the most northerly point of Tenerife in June, also at Victoria and Santa Ursula on the main island. All the records of eggs from Tenerife are in the month of June—the only juvenile specimen from this island in the Tring Museum is a very young chick obtained on the 20th of that month. During my stay on Montaña Clara, from June 7 to 14, many birds and eggs were unearthed. All the birds were sitting, and every one of the twenty eggs which I blew was perfectly fresh. From the above dates it will be seen that the breeding time of Bulwer's Petrel in the Canary Islands is the same as that in the Madeira Group.

14. **Fulmarus glacialis glupischa.** Pacific Fulmar.

Type locality—North Pacific.

Fulmarus glacialis glupischa Stejneger, Auk, i. 1884, p. 234.

Procellaria pacifica Aud.; Harcourt, Ann. & Mag. Nat. Hist. 2nd ser. vol. xv. 1855, p. 438.

Range in the North Atlantic Islands.

Madeira (straggler); one record.

Range outside the North Atlantic Islands.

Fulmarus g. glupischa is an inhabitant of both sides of the north Pacific Ocean according to the distribution given in Godman's 'Monograph.'

Record of occurrences in the North Atlantic Islands.

The single example of the Pacific Fulmar is recorded by Harcourt and included in his list of the Birds of Madeira. An undoubted straggler, this is the only record of the occurrence of the species in these seas. Unfortunately, no data are given, nor have I been able to trace the skin, if, indeed, it still exists.

I have somewhat reluctantly included this bird in my list as I cannot help thinking that the single specimen was possibly the Common Fulmar (*F. g. glacialis*). Had it not been that the bird was positively recorded by Harcourt as *Procellaria pacifica* Aud., I should have been inclined to omit it altogether.

XXVIII.—*Some Facts bearing on the Affinities of* Smithornis.

By G. L. Bates, M.B.O.U.

(Plate XVIII. & Text-figure 8.)

This short paper is written to indicate a few anatomical and other characters of the African genus *Smithornis*, hitherto placed among the Muscicapidæ, which prove that it cannot belong to that family, or, indeed, to the normal Passeres at all.

If a personal note is not out of place at the beginning, it may be said that the writer has only recently begun, with the help of the 'Vögel' of Bronn's 'Tierreich' and of the articles by Dr. Gadow in Newton's 'Dictionary of Birds,' to make a more thorough study of the birds of this part of Africa (*i.e.* Kamerun) than that involved in the collection and identification of specimens. The somewhat scanty observations here recorded are the fruits of that study.

A brief account of the distribution and habits of the different species of *Smithornis* will serve to bring the birds in question before the reader. The first species known was *S. capensis*, which, in spite of its name, is mainly east African, and seems not to be found nearer the Cape than Natal; but it has been found also in Angola, and recently, by Mr. Neave, in the extreme southern part of Belgian Congo. *S. rufolateralis*, the smaller of the two forest species, has also been long known, and has a range very extensive in longitude, from Liberia on the west to Lake Albert on the east, but very narrow in latitude. *S. sharpei*, the largest species, was discovered by Alexander on Fernando Po in 1902, and is figured in 'The Ibis' for July, 1903. About the same time it was found also in southern Kamerun by Zenker and also by the writer; and a little later, far to the east, by the Ruwenzori Expedition. *S. camarunensis*, described by Sharpe from the writer's collection in Kamerun and later found by the Ruwenzori Expedition, closely resembles *S. capensis*, and perhaps should be regarded as a geographical race of that species, well marked by the deeper coloration, attributable to its having become a resident of the forest region. In Kamerun it is a bird of the waste cultivated ground or second-growth forest, never found in the primitive forest, to which the other two species are confined.

The sketch-map (Plate XVIII.) shows very clearly the distribution of the four recognised species of *Smithornis,* and the following is a list of recorded localities which are numbered to correspond with those on the map. B.M. indicates examples in the British Museum.

Smithornis capensis.

Platyrhynchus capensis Smith, Ill. Zool. S. Afr., Aves, pl. 27, 1839: forests towards Delagoa bay.

Smithornis capensis albogularis Hartert, Bull. B.O.C. xiv. 1904, p. 73: Canhoça, N. Angola.

Brit. East Africa—1 Kikuyu (Neumann); **German East Africa**—2 Kahi (Neumann), 3 Usaramo, 4 Lindi (Fischer), 5 Ukinga (Fülleborn), 6 Rovuma river, B.M. (Thomson); **Nyasaland**—7 Fort Hill, B.M., 8 Ntondini, B.M. (Sharpe), 9 Zomba, B.M., 10 Milanji, B.M. (Whyte), 11 Ruo river, B.M. (Percival); **Portuguese E. Africa**—12 Coguno, B.M., 13 Beira, B.M., 14 Tambarara, B.M. (Grant), 15 Delagoa bay (Smith); **Natal**—16 Zululand (Woodward), 17 Durban, B.M. (Gordge), 18 Pinetown (Ayres); **South Rhodesia**—19 Chirinda, B.M., 20 Jihu river, B.M. (Swynnerton); **N.E. Rhodesia**—21 Loangwa river, B.M. (Neave); **Belgian Congo**—22 Bunkeya, B.M., 23 Dikulwe valley, B.M. (Neave); **Angola**—24 Canhoça and 25 Ndala Tando, B.M. (Ansorge).

Smithornis camarunensis.

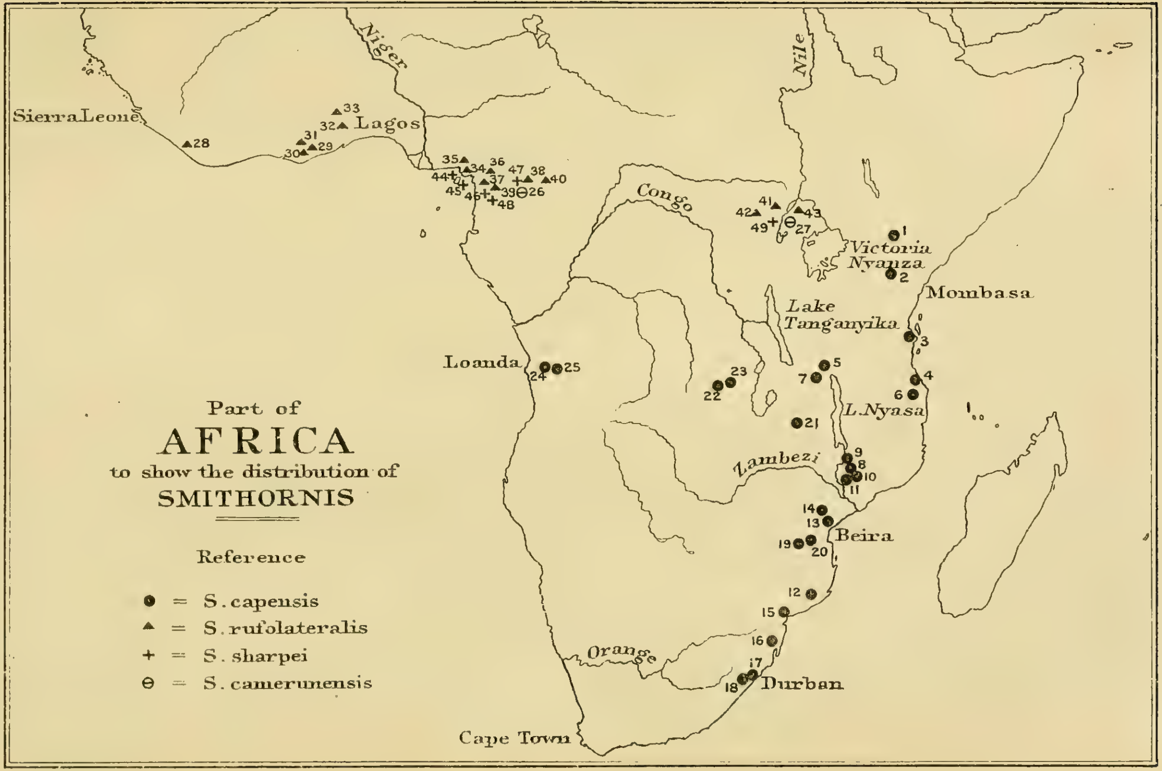
Smithornis camarunensis Sharpe, Ibis, 1905, p. 469: River Ja, Kamerun.

Kamerun—26 River Ja, B.M. (Bates); **Uganda**; 27 Mpanga forest, B.M. (Woosnam).

Smithornis rufolateralis.

Smithornis rufolateralis Gray, P. Z. S. 1864, p. 143, pl. xvi: "West Africa," exact locality unknown.

Liberia—28 Hilltown Wifla and Galilee Mt. (Büttikofer



Part of
AFRICA
to show the distribution of
SMITHORNIS

Reference
● = S. capensis
▲ = S. rufolateralis
+ = S. sharpei
⊖ = S. camerunensis
Sierra Leone
Lagos
Niger
Nile
Congo
Victoria Nyanza
Mombasa
Lake Tanganyika
L. Nyasa
Loanda
Zambezi
Beira
Orange
Durban
Cape Town
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4
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and Stampfli); **Gold Coast**—29 Fantee and Denkera, B.M. (Ussher), 30 Wassaw, B.M. (Blissett), 31 Fumsu, B.M. (Alexander); **Togoland**—32 Misahöhe (Baumann), 33 Bismarckburg (Büttner); **Kamerun**—34 Victoria (Preuss), 35 Ekundu (Sjöstedt), 36 Yaunde, 37 Bipindi (Zenker), 38 River Ja, B.M., 39 Efulen, B.M., 40 Zima country, B.M. (Bates); **Belgian Congo**—41 Irumu (Emin), 42 Mawambi, Congo forest, B.M. (Woosnam); **Uganda**—43 Bugoma forest, B.M. (Christy).

Smithornis sharpei.

Smithornis sharpei Alexander, Bull. B. O. C. xiii. Jan. 30, 1903, p. 34: Mt. St. Isabel, Fernando Po.

Smithornis zenkeri Reichenow, Orn. Monatsb. xi. Mch. 1, 1903, p. 41: Bipindi, Kamerun.

Fernando Po—44 Mt. St. Isabel, B.M. (Alexander), 45 Bantebari, B.M. (Seimund); **Kamerun**—46 Bipindi (Zenker), 47 River Ja, B.M., and 48 Efulen, B.M. (Bates); **Belgian Congo**—49 near Fort Beni, Semliki valley, B.M. (Woosnam).

Thus the species of the genus *Smithornis*, if we consider *S. capensis* and *S. camarunensis* as geographical races of the same species, follow the general rule found among the birds of Kamerun, that those species that have a wide African distribution are inhabitants of the farms about the villages or of second-growth forest, while species peculiar to the Forest Region are strictly birds of the primitive forest. The kind of country frequented by each species of *Smithornis* can be seen even from the materials used in making the hanging, pocket-shaped nests, which in shape and structure are exactly alike throughout the genus; for nests of *S. camarunensis* are made of the fibres of weeds or plantains, while those of the other two species are of forest materials, such as moss. The plumage of the two forest species shows a considerable amount of bright colour; while that of the species of east and south Africa is mostly olive-brown and black, the form of it found in the forest region (*S. camarunensis*) having a little more of the black than the other.

The habit of all these birds is to sit silently in dark places in the forest, trusting to their stillness and the imperfect light for protection. But they are not always silent, for they make, at times, a very peculiar noise, which may be described as a long-continued trilled "r" accompanied by a voice-note, but is perhaps harsher than that description would imply; the adjective "grinding" has been appropriately applied to it. This noise is imitated by the natives of this country by making the protruded lips vibrate while uttering the note. It is evidently not a sound made with the ordinary avian vocal organs used in the ordinary way. All the species make this noise. It is made only while the bird is in the air, taking a short circular flight from its perch and back again, at the same time vibrating its wings rapidly and displaying the white patch at other times hidden in the plumage of its back. The whole performance seems well calculated to be a mating-call and display of the male to attract the female. When, drawn by the noise, which can be heard at a distance, the mate approaches near enough, she can see the white patch twinkling in the thicket, where the bird would be invisible if sitting still. I have seen no evidence that this noise is made by the female bird, and I should consider this unlikely. Two birds, or even three, that may often be heard, in different directions, answering one another, are more likely rival males. These grinding calls are kept up at intervals of a minute or less, in early morning and late evening, and sometimes at other hours on dark days. I have never heard a bird of any of the species of *Smithornis* make any other call or sound; but for a reference to another cry made by *S. capensis*, see Mr. Claude Grant's account in 'The Ibis,' 1911, p. 422.

In connection with the display of the white patch in the back-plumage it may be added that the patch is present, but small in females, and that it is absent in young birds.

Now will be given the promised anatomical facts.

Syrinx.—It was the peculiar noise made by the birds belonging to the genus *Smithornis*, and their apparent inability to utter any kind of song such as most or all Flycatchers sometimes utter, even though usually silent, that led me first to look at the lower end of the trachea and the organ of voice. It was seen at once that the syrinx was bare or nearly bare of muscles lower down than the point where the sterno-tracheal muscles leave the trachea, to go to either anterior lateral process of the sternum. This was confirmed in a considerable number of specimens belonging to all three species of *Smithornis*; but I do not feel able to make a full description of the syrinx. Regarding one example of *S. sharpei* the following note was written down at the time: "Alongside the sterno-tracheal muscles where these leave the trachea, and ventrally from them, run some thin muscular strands continuing on down the trachea to the beginning of the bronchi. These are so thin as to be made out with difficulty, and no other muscles are to be seen on the syrinx." Of most of the specimens examined I was content to say that no muscles could be made out attached to the lower end of the trachea or the bronchi.

Deep Plantar Tendons.—Another discovery was made on dissecting the leg and foot of a specimen of *S. camarunensis*, and finding the flexor muscles of the toes with their tendons; a slender vinculum was found running downwards from the tendon of the *M. flexor hallucis* and joining that of the *M. flexor profundus* just above the point where the latter divides into branches to the three forward toes. When the tendon of the *flexor hallucis* was pulled, all the toes were bent, though not quite simultaneously, for the hallux was moved a little in advance of the other toes; when the tendon of the *profundus* was pulled, the three forward toes were bent, while the hallux was not moved. This observation was confirmed in a number of cases, with birds belonging to this and the other two species as well, and the presence of the vinculum was ascertained either by dissecting the foot so that it could be seen, or by noting the effect on the toes of pulling the tendons. But a bird of the species *S. rufolateralis* that was skinned on one of the days while this paper was being prepared, seemed to afford an exception, for pulling the tendon of the *flexor hallucis* affected the hallux only, in both feet alike. In this specimen the vinculum was either absent or so slight that it was easily broken. This case seems to show that the character of the vinculum is somewhat variable. But there is no doubt about its presence in the other specimens examined.

According to Gadow, this vinculum is found, among Passeriformes, only in the Eurylæmidæ.

Sternum.—While I think that a comparison of thoroughly-cleaned sterna of *Smithornis* with those of other genera of Passeres would show interesting though slight differences, only one point can be stated now, and it is a point of similarity and not of difference. The *spina sternalis* is deeply forked or Y-shaped, as in most Passeriformes. Gadow's statement regarding the Eurylæmidæ is "*Spina externa* long but simple, with rounded tip or scarcely indicated fork."

Tongue.—The tongue in *Smithornis* is not only broad, to suit the shape of the bill, but markedly thick and fleshy, though with thin edges. In this fleshy tongue is perhaps to be found the clue to the mystery of the way in which the bird's peculiar noise is produced.

A character found in one of the little bones of the hyoid apparatus in Passerine birds, though I have never seen a reference to it in any book, can be given here with some confidence as being important because constant. It has been my custom for a good while to pull out (when it was not too much trouble) the tongues of birds skinned, and to remove as much of the muscle on the hyoid bones as could be quickly done, and dry and label these tongues with the bones attached. Thus quite a collection of birds' tongues has been formed. A comparison of these shows that the little urohyal bone, situated between the bases of the hyoid horns and lying with point downwards, when in position in the bird, against the front of the thyroid cartilage, has a peculiar shape in all normal Passeres. In these the free end of the urohyal is very flat with a thin border of cartilage at the edges and tip. The amount of this flattening and widening varies among the families of Passeres, but there is similarity in this regard between members of each family. The Pycnonotidæ have the urohyal the widest and flattest of any of the birds I have observed, and the

Muscicapidæ the least so; but even where least marked, the characteristic shape is unmistakably seen. It seems to be a special development by which the little bone is made to fit more perfectly to the cartilage of the throat. In other orders of birds the tip of the urohyal has no flat margin, but is a little rod or point, often slightly bent to one side. In the tongue of *Smithornis,* the tip of the urohyal is rod-shaped and not flattened at the edges.

Podotheca.—The covering of the metatarsus in *Smithornis* (Text-figure 8, B) is different from that found in normal Passeres, in that there are no horny plates or scutes on the posterior part, but only horny granulations or tubercles situated on the hinder edge. Six or seven large scutes in a single row form the covering of the front of the metatarsus; between these and the granulations behind, on either side, is bare skin.

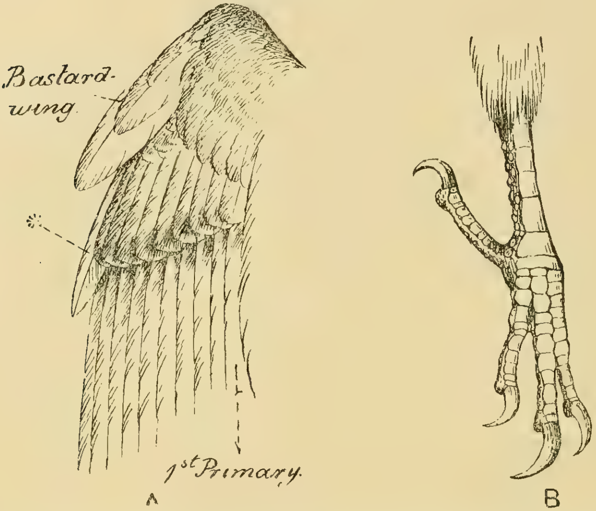
Toes.—The second and third toes have most of the first joint united by a web. The third and fourth toes are firmly united as far as the distal end of the second joint of the fourth or the middle of the second joint of the third, and loosely united by a web a little farther.

Aftershaft.—Not the least interesting fact discovered with regard to the birds under consideration, is the seeming absence of any aftershaft to the feathers. On examination of feathers from birds of all three species of *Smithornis,* no aftershaft—not even a rudimentary one large enough to be seen without a microscope—has been found.

Pterylography of the Wing.—The number of the remiges is not peculiar in *Smithornis.* There are, on the cubitus, nine, and in some cases—perhaps regularly in some species—a tenth small one near the elbow-joint; there are eleven (Text-figure 8, A) on the manus, that is, ten functional ones and the remicle. The remicle, in a number of specimens of *S. camarunensis,* was found to vary much in length, but to average about 5 millimetres; in two specimens of *S. sharpei* it measured 5 or 6 millimetres; in two of *S. rufolateralis,* 2 or 2·5 millimetres.

Of the wing-coverts, only a peculiarity in the relative lengths of the major upper coverts is to be described. The outermost, or tenth one of this series, at the tip of the wing, which in all other birds that I have examined is the shortest, I have found in *Smithornis* to be the longest of all. The others grow gradually shorter from the carpal joint to the tip of the wing, as this row of coverts does in all birds; but when the tenth and last one is reached, it is found to be not only longer than those next to it, but even longer than the one next the carpal joint. The measured lengths of these feathers in one wing of a *Smithornis camarunensis* is here given as typical of a number of wings examined from all the three species:—

Text-fig. 8.



A. Upper surface of manus of left wing of *Smithornis rufolateralis* (long outer or 10th major covert marked with an asterisk).
B. Right foot of *Smithornis camarunensis*, to show podotheca.

First major upper covert on the manus ……	16 mm.
Ninth ,, ,, ,, ,, ,, ……	10 ,,
Tenth ,, ,, ,, ,, ,, ……	17 ,,

This tenth major upper covert on the manus is, I think, to be regarded as the covert of the tenth remex, and not of the remicle, these coverts being situated each on the distal side of its remex.

XXIX.—*Notes on some Species of the Genus* Thalassogeron.

By T. Salvadori, Hon.M.B.O.U.

(Plate XIX.)

In Mr. Du Cane Godman's 'Monograph of the Petrels,' at the end there is a classification. At p. liv there is a key to the species of the genus *Thalassogeron,* which are divided into three heads:—

a. Culmen in adult bright yellow, sides of the bill black.

b. Bill generally pale, the sides not black, and the culmen not distinctly yellow.

c. Bill entirely black, including the culmen.

The object of this paper is to offer some remarks as regards the species of the first and third groups.

The third group contains only one very rare species:—

Thalassogeron carteri.

Thalassogeron carteri Rothschild, Bull. B. O. C. xiv. 1903, p. 6: N.W. Australia; Godman, Mon. of the Petrels, 1910, p. 361, pl. 102 a.

Diomedea carteri Rothsch. Bull. B. O. C. xv. 1904, p. 44: Gough Isl.; Mathews, Nov. Zool. xviii. 1911, p. 206.

Thalassogeron sp. inc. Eagle Clarke, Ibis, 1905, p. 265: Gough Isl.

Mr. Mathews (*l. c.*) mentions this species as known from a *unique* specimen, the type, but it appears that a second specimen is the one from Gough Island, admitting that it belongs to the same species.

During a visit of the Hon. W. Rothschild to the Museum of Turin, some years ago, he pointed out to me that among our Albatrosses there is one which he recognised as belonging to *T. carteri.* This precious specimen agrees pretty well with the figure in the 'Monograph of the Petrels,' except in the bill, which is not so deeply black; it was collected during the voyage of the 'Magenta' on April 6th, 1866, lat. 35° 01′ S., long. 85° 00′ E. On the same occasion were killed two specimens of *Thalassogeron chlororhynchus*, fully adult, still preserved in our Museum. The specimen, which has now become *T. carteri*, was registered as a young bird of *T. chlororhynchus*, and Prof. Giglioli, who collected it, described the bill as *uniformly black*.

The circumstance that the three specimens were killed on the same day and in the same spot makes me rather uncertain as regards the specific value of *T. carteri*. It appears that Godman has also entertained some doubt as to whether *T. carteri* was not established on a young bird of *T. chlororhynchus*. He says :—"It is possible that, like some of the true Albatrosses, the members of the genus *Thalassogeron* do not assume their fully adult plumage for two or three years, and that the bill remains black for some time before it becomes parti-coloured."

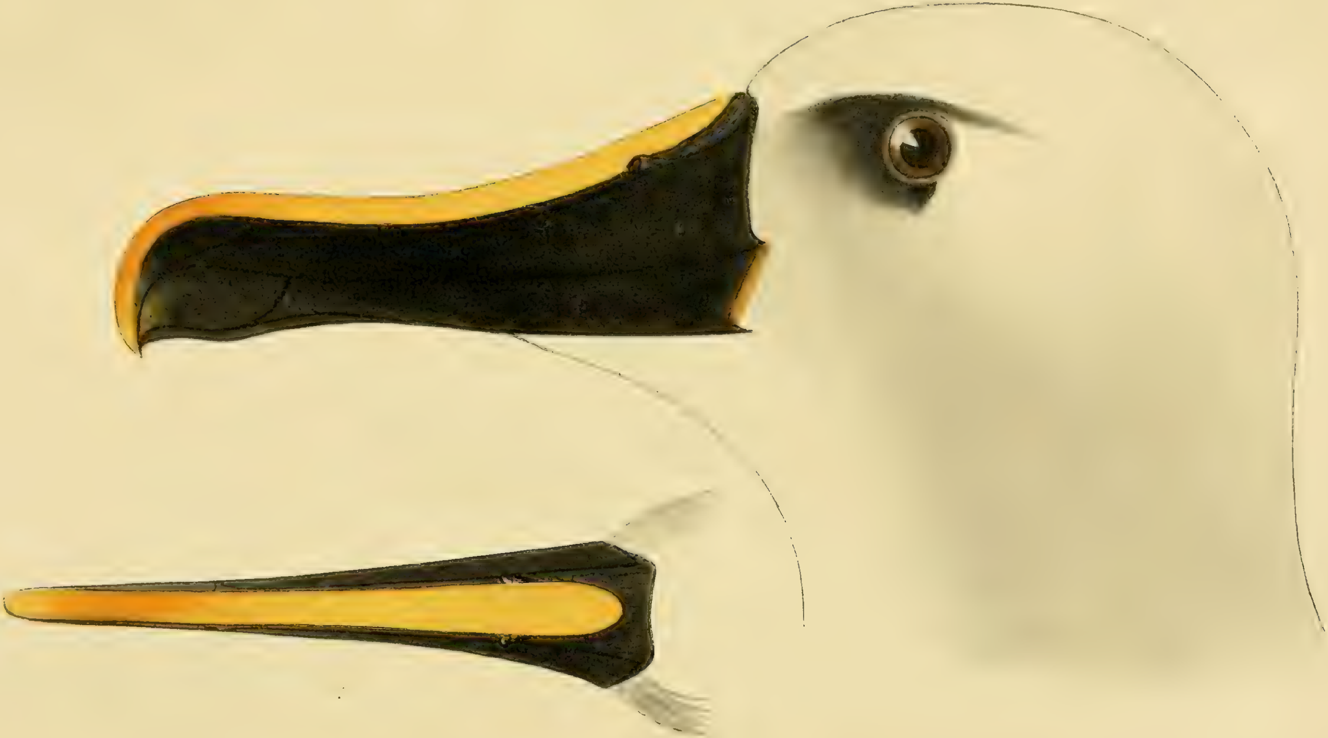
No less interesting is a *Thalassogeron* of the first group, unfortunately represented in our Museum only by a head and neck, from an unknown locality, but collected by Dr. Cavalli during the expedition of H.I.M. S. 'Liguria.' (Plate XIX.)

The specimen, fully adult, does not agree with any of the species figured in the 'Monograph of the Petrels,' and cannot be identified with the help of the text of the work. But I must remark that the key of the species of the genus *Thalassogeron* in the Monograph is rather misleading. In it the three species *T. culminatus*, *T. chlororhynchus*, and *T. eximius* are divided as follows :—

a′. Culminicorn rounded posteriorly..............	*T. culminatus*.
b′. Culminicorn pointed posteriorly	*T. chlororhynchus*. *T. eximius*.

While the latter character holds good for *T. chlororhynchus* it fails as regards *T. eximius*. In fact Mr. Verrill's description of the latter species (Tr. Connect. Ac. Sc. ix. p. 440) is accompanied by a good figure of the bill (pl. viii.

Ibis. 1914. Pl. XIX.



THALASSOGERON EXIMIUS.

MENPES PRESS WATFORD

figs. 1, 2), which shows the culminicorn perfectly rounded posteriorly, and not pointed.

Failing to identify my specimen with the help of the 'Monograph of the Petrels,' I was beginning to think that it belonged to an undescribed species, but as soon as I compared it with Mr. Verrill's description and figure, I scarcely doubted that the bird examined was a specimen of *T. eximius.* It agrees with Verrill's description, which runs as follows:—

"Forehead and fore part of the head on top pure white from the bill back to about the centre of the eyes, from there gradually blending into pale ash-grey, which extends around on to the cheeks and sides of the head, but again fades out to pure white on the throat. In front of the eye, almost from the base of the bill, and bordered on top by the pure white of the forehead, is *a very dark sooty-grey patch, which extends over the eye and around to the centre of the lower lid, and the space immediately behind the eye being pure white, blending into the ash of the surrounding parts.* Back of the head and neck light ash-grey, gradually darkening posteriorly. . . . The extreme base of the culmen does not reach to the feathers of the forehead, but is separated by a narrow strip of naked skin and is bordered by a very narrow line of dark brown. From where the brown ceases the culmen is bright yellow, gradually deepening in tint and becoming orange at about two-thirds the distance from the base, and finally dull red at the unguis, the extreme tip of the mandible being horn-colour. All the rest of the bill is pure black, except the extreme outer end of the lower mandible, which is light horn-colour."

According to Mr. Verrill the lower mandible lacks completely the transverse yellow bar at its base, but I doubt the correctness of the statement, as all the allied species have the yellow bar. Certainly the specimen we have shows a prominent yellow line at the base of the lower mandible.

The species of the first section of the genus or subgenus *Thalassogeron* at present reach the number of four, and may be distinguished according to the following key:—

Culmen in adult bright yellow; sides of the bill black:
a. Culminicorn rounded posteriorly.
a'. Lower edge of mandible yellow.
a.'' Smaller; outer toe 117 mm.; culminicorn reaching the feathers of the forehead .... *T. culminatus.*
b.'' Larger; outer toe 124 mm.; culminicorn not reaching the feathers of the forehead .... *T. desolationis.*
b'. Lower edge of mandible not yellow.... *T. eximius.*
b. Culminicorn pointed posteriorly; lower edge of the mandible not yellow .... *T. chlororhynchus.*

XXX.—*Notices of recent Ornithological Publications.*

Bryant on the Western Meadowlark.

[A determination of the economic status of the Western Meadowlark (*Sturnella neglecta*) in California, by Harold Child Bryant. Univ. Cal. Publ. Zool., xi. 1914, pp. 377–510, pls. 21–24.]

Mr. Bryant has been for some time engaged in solving the question of the habits of the Western Meadowlark, and as to whether its usefulness outweighs its destructiveness, and this paper appears to be an elaboration of a previous one reviewed in the 'Ibis' for 1912 (p. 688).

A very large amount of work has been done and the present results are based on the examination of over 2000 stomachs taken at different seasons of the year in different parts of California, so that the conclusions should be based on sound and ample evidence.

The injury to crops which the Meadowlark is accused of, consists of destroying sprouting grain (especially barley) by boring down beside the sprout and eating the kernel. On the other hand this small amount of damage, which can be easily avoided by deeper planting, is more than overbalanced by the destruction for food, especially in the nesting season, of large numbers of noxious insects.

Chandler on Areas of Distribution and Extent of Specific Modification.

[The effect of extent of distribution or speciation. By Asa C. Chandler. American Nat., xlviii. 1914, pp. 129–160.]

This is an essay in which an attempt is made to show that, as the range of a group of animals or birds is extended, the number of species increase out of proportion to the genera, and the genera out of proportion to the families.

This thesis is tested by the author in a series of tables containing the number of genera and species of restricted as compared with wide areas. One example so taken deals with the birds of various Californian areas. Here we find in the restricted San Bernardino Mts. area (2000 sq. miles) 97 genera and 121 species, a ratio or index of modification of 1·25 species to one genus; in southern California (30,000 sq. miles) the figures are 153 and 199, giving an index of 1·30; in the whole of California (158,000 sq. miles) the figures are 186 and 347 and the index 1·87, thus showing that as the area increases, "speciation" or specific modification acts more strongly.

Many other points are brought out in this essay in regard to the theoretical explanation of these facts, and as to how much speciation is due to isolation, the time-element and other factors, but these cannot here be satisfactorily dealt with and all we can now do is to draw attention to the main thesis.

Chandler on the Plumage of Circus hudsonius.

[Modifications and adaptations to function in the feathers of *Circus hudsonius.* By Asa C. Chandler. Univ. Cal. Publ. Zool., vol. xi. 1914, pp. 329–376, pls. xvi.-xx.]

This paper gives a very complete account of the pterylography, moults and plumage of the adult Marsh Hawk

(*Circus hudsonius*). The different types of feathers clothing different parts of the body are all separately discussed, and their structure, both macroscopic and microscopic, elucidated, and considerable space is occupied with suggestions as to the meaning and use of the various types of feather structure.

Chapman on new Neotropical Birds.

[Diagnoses of apparently new Colombian Birds.—II. By Frank M. Chapman. Bulletin Amer. Mus. Nat. Hist., xxxiii. 1914, pp. 167–192, map.

Descriptions of a new Genus and Species of Birds from Venezuela. Id. ibid. pp. 193–197.]

The latest expedition of the American Museum of Natural History, under the leadership of the author of these papers, to Colombia, took place between January and May of last year. The district explored was the "Bogotá region," whence so many species have been described from native-made "Bogotá" skins. These are of course without data and have in many cases changed colour, and it was thought advisable to obtain a good series of scientifically-made specimens. Some 2300, representing over 500 species, were brought back. In the first paper diagnoses of 8 new species and 20 new subspecies are given, all from different parts of Colombia.

The second paper contains descriptions of the novelties obtained by another American Museum expedition, under Mr. L. E. Miller. In December 1912 he ascended the Orinoco to the neighbourhood of Mt. Duida, a most remote spot in the southernmost part of Venezuela, but owing to the illness of his companion, Mr. F. X. Iglseder, he was compelled to return before his work was completed. In addition, some 600 specimens were secured at Cristobal Colon on the Paria peninsula, which juts out from Venezuela towards the island of Trinidad. New species of *Geotrygon*, *Neomorphus*, and *Nonnulla* are diagnosed, and a new genus, *Microxenops*, is proposed for a new species, *M. milleri*, a form allied to *Xenops* and referred to the Furnariidæ.

Flower on Indian Zoological Gardens.

[Report on a Zoological Mission to India in 1913 by Capt. L. S. Flower, Director Egyptian Government Zoological Service. Pp. 1-100, 12 pls. Cairo (Govt. Press), 1914. 8vo. Price 5*s*.]

Last summer Capt. Stanley Flower was sent on a mission to India to inspect the Zoological Gardens and other scientific institutions there, to report on the management, and to arrange for exchanges with the Gardens at Gîza. In the present report he gives an account of his journeys of nearly 8000 miles in India and of the characteristic features of all the collections visited. It is for the most part with the larger mammals and reptiles that he was concerned, but there are many references to birds which should be interesting to readers of 'The Ibis.'

A table on page 6 gives a list of twelve zoological gardens at present existing in India, and of these three were of special importance—Calcutta for its large collections, containing many rare species; Trivandrum, which, owing to the work of Mr. H. S. Ferguson, is a most complete and scientifically arranged institution; and Peshawar for the admirable way in which the animals are looked after.

A series of twelve photographs, including one of the aviary in the Peshawar Gardens, illustrates the report, and were mostly taken by Capt. Flower himself.

Grinnell on Berkeley Birds.

[A second list of the Birds of the Berkeley Campus. By Joseph Grinnell. Condor, vol. xvi. 1914, pp. 28-40.]

It is a pleasant practice in the States to set a University or College in an area of open ground; this, planted with trees and grass, often forms a beautiful setting to the various buildings.

The State University of California, which is at Berkeley, situated on the landward or eastern shore of the Bay of San Francisco, on the opposite side to the city of the same name, is fortunate enough to be surrounded by a large park or campus of 550 acres, rising from an elevation of

200 feet at its western edge to a height of 1300 feet at its eastern boundary on the crest of the Berkeley Hills.

This campus is, on its lower elevations, planted with groves and gardens, while the higher parts are truly "wild"; it contains a large varied avifauna of some 97 species, and Mr. Grinnell has here given us a list of these with remarks on the status of each. A previous edition published in the "University of California Chronicle" in 1911, contained the names of 76 species only.

Grinnell on the Birds of the Valley of the lower Colorado River.

[An account of the Mammals and Birds of the lower Colorado Valley, with special reference to the distributional problems presented, by Joseph Grinnell. Univ. California Publ. in Zool. vol. xii. 1914, pp. 51–294, 11 pls., 9 text-figs.]

The River Colorado, after passing through the Grand Cañon, which is chiefly in the State of Arizona and which, with other cañons, forms the characteristic feature of the middle third of the river, forms in the lower part of its course the boundary line between the States of California and Arizona, from Mojave to Yuma, a distance of about 150 miles in a straight line. Below Yuma, the river enters Mexican territory and shortly afterwards empties itself into the Gulf of California.

The present paper deals with the fauna of this lower third of the river, where the stream runs in sober fashion in a more or less wide valley, while the country on either side forms one of the driest and hottest deserts in the world.

An expedition was led by Mr. Grinnell between February and May, 1910, to carry on field-work in this region. The party commenced their survey at the town of Needles and travelled by boat down the river, from place to place, obtaining 1374 specimens of birds and 1272 of mammals, all of which are now in the California Museum of Vertebrate Zoology.

In discussing the distribution of the forms of animal life here and elsewhere, Mr. Grinnell recognizes what he calls three distinct orders of distributional behaviour; these he terms zonal, faunal, and associational.

The first of these orders, the zonal, which is associated with the name of Mr. Merriam, is dependent on temperature, that is to say, the distribution of each form of life is limited by certain extremes of temperature, especially during the reproductive season.

The second order of distribution is that very many species appear to be kept within geographic bounds by limits of atmospheric humidity or the reverse.

The third order of distributional control, the associational, is dependent on local conditions—soil and vegetation chiefly—which delimit the existence of a species beyond a certain area.

It is with these "associations" that the preliminary discussions of this paper are mostly occupied. Mr. Grinnell distinguished a River association, a Willow-cottonwood (*Salix* and *Populus*) association, a Tule (*i. e.* Reed-bed) association, an Arrow-weed (*Pluchea*) association, and Quail-bush (*Atriplex*), Mesquite (*Prosopis*), Saltbush (*Atriplex*), Creosote (*Larrea*), Cat-claw, Saguaro (*i. e.* Giant Cactus), and finally, Encelia (*i.e.*, Rocky Hills) associations. He gives lists of characteristic and exclusive birds inhabiting each of these associations, which lie more or less in order as one passes from the river-bed across the valley to the desert country lying on either side.

There is a long list of 150 species of birds, the distribution and status of each of which is discussed in the main part of the paper.

Hartert's Palæarctic Birds.

[Die Vögel der paläarktischen Fauna. Von Ernst Hartert. Heft viii. (Bd. ii. 2). Pp. 961–1088. Berlin (Friedländer), Aug. 1913. 4 Marks.]

The last-issued part of Hartert's great work on the Palæarctic Birds completes the Owls and commences on the Accipitres, of which only one genus, *Falco*, containing the Falcons and Kestrels, is fully dealt with.

One interesting change is made from the commencement of the Owls which certainly enhances the value of the work from the systematist's point of view. This is that the author now gives a complete synonymy of the generic names, naming and discussing the types of each genus. In the first volume the want of this information certainly detracted from the value of the work.

No very startling changes of nomenclature are proposed beyond those already familiar to the users of the recently published 'Hand-list of British Birds,' but it would surely have been better to have settled one way or another which generic names should be used for Tengmalm's Owl and the Little Owl. In the former case, *Ægolius* Kaup 1829 and *Cryptoglaux* Richmond 1901; in the latter *Athene* Boie 1822 and *Carine* Kaup 1829, are given as alternatives, Dr. Hartert being apparently undecided whether the two earlier names in each case should be rejected or not through the prior use of *Ægolia* and *Athena.* Surely it would have been wiser to come to some decision one way or another.

Of the Eagle-Owl (*Bubo bubo*) as many as eighteen distinct forms or subspecies are recognised. This seems to be an unnecessarily large number, though of course without going carefully into the matter it is not possible to make a serious criticism. Three new subspecies are distinguished in the present part for the first time, i. e., *Bubo bubo swinhoei,* south China, *Athene noctua lilith,* Mesopotamia, and *Falco tinnunculus dacotiæ*, Eastern Canary Islands.

Howard's British Warblers.

[The British Warblers. A History with Problems of their Lives. By H. Eliot Howard, F.Z.S., M.B.O.U. Illustrated by Henrik Grönvold. Part 8, Dec. 1913. London (Porter).]

The present part of Mr. Howard's detailed study of the British Warblers is chiefly devoted to the Garden and Wood Warblers. The Barred (*Sylvia nisoria*) and the Subalpine (*S. subalpina*) are dismissed with short paragraphs of description and distributional details, the former being accorded one of Grönvold's delicately tinted plates; the plate of the latter appeared in the previous part.

Most of our readers are by this time familiar with Mr. Howard's work, which is now approaching completion, and with the extraordinarily minute and careful observations which must be necessary, to present so intimate a picture of the everyday life of these somewhat shy birds.

The Garden Warbler is compared with the Blackcap, to which it is closely related in many respects, both in structure and habits. A good deal is said about the "territory" taken up by the males on their arrival in spring, where they await the coming of the female, which is often a week or ten days later. The male proclaims his appropriation of an estate by incessant singing ; this goes on until the females arrive and mating has taken place ; after this, Mr. Howard remarks, there is a gradual decrease of song.

The peculiar attitudes assumed during the period of sexual activity are illustrated by three black-and-white plates of the male and one of the female, and are described with much detail.

The present part also contains a coloured plate of the Dartford Warbler and two photogravure plates of the Wood Warbler.

Baron Loudon's Fifth Journey to Central Asia.

[Ergebnisse meiner V. Reise nach dem Talyscher Tieflande und Transkaspien vom 30 i. (12 ii.) bis zum 1 (14) v. 1911. Baron Harald Loudon. Ann. Mus. Zool. Acad. Imp. Sci. St. Pétersbourg, xviii. 1914, pp. 431–510.]

The first half of this paper contains an account of Baron Loudon's journey, extracted from his diary. Leaving Riga, his home, on January 30, he reached the Black Sea on February 4 and travelled on to Tiflis, where some little time was spent. Thence he went to Talysch, the most south-eastern corner of Russia, lying between the Caspian Sea and the Persian frontier, where some time was spent in collecting. Then crossing the Caspian, he travelled along the Central Asian Railway to Samarkand and back to Russia by the northern route *via* Orenburg, making many side-visits at interesting places.

With the assistance of his brother and cousin, and a skinner, he was able to bring back some 2000 bird-skins as well as a good set of mammals, reptiles, and insects, all of which are now, or will eventually be placed in the Museum at St. Petersburg.

Two lists are given, one of the Transcaucasian collection and one of the Central Asian, but only those species are treated of at length which were not obtained on previous journeys.

Two new subspecies, *Turdus viscivorus sarudnyi* and *T. pilaris sarudnyi* are noticed, but they appear to have been first described in the "Ornith. Monatsber." for 1912 (vol. xx. pp. 5–6).

Mathews on Australian Birds.

[The Birds of Australia. By Gregory M. Mathews. Vol. iii. parts 4, 5, Dec. 1913 & Mar. 1914, pp. 301–444, pls. 167–189. London. (Witherby & Co.) 4to.]

In these parts Mr. Mathews provides his readers with several excellent discussions of various family and generic groups; so that, if they do not in all cases find themselves able to agree with his conclusions, they will at least be glad to have the debatable points thoroughly examined. In this connection it may be well first to note the following subspecies, which were formerly proposed, but have been sunk in the present instalment of the work:—

Gallinago australis oweni (=*Subspilura megala*), *Irediparra gallinacea melvillensis*, *Orthorhamphus magnirostris melvillensis*, *O. m. queenslandicus*, *Ibis molucca alligator*, *Carphibis spinicollis fitzroyi*, *Spatherodia regia stalkeri*, *Platibis flavipes whitei*, *Xenorhynchus asiaticus rogersi*, *Ardea sumatrana gilberti*, *Herodias alba neglecta*, *Notophoyx novæ-hollandiæ parryi*, and *N. pacifica alexandræ*.

On the other hand, the author proposes a new genus, *Subglareola*, for *Glareola ocularis* of Verreaux, which he removes from Sharpe's *Galactochrysea*.

The next important point, and one about which there has been much dispute, is that he now, for the sake of uniformity, accepts Brisson's genera, following the ruling of the last International Zoological Congress.

Two well-known birds are classified in quite a new way. In the Scolopacidæ Mr. Mathews considers that the bill (and other characteristics) of the Australian Painted Snipe are not "Scolopacine," and proposes for that species and its congeners the new family Rostratulidæ. Again, the Australian "Dotterel" is clearly shown to be an abberant Courser, and is therefore included in the family Glareolidæ.

All the birds treated in these parts are of somewhat exceptional interest, especially as regards their life-histories, and the selections as to these seem to us particularly well chosen.

Under the Jacanas *Parra* is said to be antedated by *Jacana*, and it is proposed to change the Family name from Parridæ to Jacanidæ, but the former is usually accepted, and we do not like the change or consider it necessary. Similarly for the Stone-Curlews Burhinidæ is used for Œdicnemidæ ; but even if we accept this we should be very chary of using the term "Burhinine" in English ; these adjectives are only useful when the Family name is firmly settled. In this Family *Orthorhamphus* is accepted as differing from *Esacus*, while the bills are well figured to show the distinctions. Four subspecies of *Burhinus magnirostris* at least are recognised.

We may pass quickly over the Australian Crane under its still unfamiliar name of *Mathewsia* to note that *Threskiornis* is preferred to *Ibis* and *Spatherodia* upheld for (*Platalea*) *regia*, but must pause longer to join cordially in overthrowing Billberg's *Egatheus* for the Glossy Ibises, and restoring the better known *Plegadis*. The Australian form of this group is found to differ from the European and is called *P. falcinellus peregrinus*.

Similarly the Jabiru is *Xenorhynchus asiaticus australis*, for it never, says the author, ought to have been confounded with its Indian congener.

The Grey Heron is practically rejected as an Australian species, and the reader will find that in three cases Gould's names are resuscitated for other Herons, though used in a subspecific sense, while it must be remembered that *Myola* is Mr. Mathews' new name for *Ardea pacifica*.

Phillips on Size Inheritance.

[Size Inheritance in Ducks. Journal of Experimental Zoology, Philadelphia, xii. 1912, pp. 369–380.

A Further Study of Size Inheritance in Ducks, with Observations on the Sex Ratio of Hybrid Birds. Id. ibid. xvi. 1914, pp. 131–148.]

These papers contain the results of a series of experiments carried out by the author at the Laboratory of Genetics of the Bussey Institution.

The birds used were the large white Rouen variety and the smaller domesticated Mallard, which are perfectly fertile with each other, and the object was to find out whether, in the F_2 generation, any striking segregation of size occurred. The results did not throw any very clear light on the question of the Mendelian inheritance of the character of size, and the author suggests that this may be due to "the high coefficient of variability in both the parent races." Some other interesting results are recorded.

Phillips on Birds from the Sudan.

[Two new African Birds. By John C. Phillips. Proc. Biol. Soc. Washington, xxvi. 1913, pp. 167–168.

Notes on a collection of Birds from the Sudan. By John C. Phillips. Bull. Mus. Comp. Zool. Harvard Coll. lviii. 1913, pp. 1–27.]

Accompanied by Dr G. M. Allen the writer made an excursion up the Blue Nile from Khartoum in December 1912 and January 1913. Their farthest point was Fazogli, a place close to the Abyssinian frontier, where Mr. Butler found many birds in May, but Mr. Phillips was rather disappointed with his booty thence. A list of the species obtained is given, and in it are included two supposed new forms described in the first paper quoted, viz. *Caprimulgus eleanoræ* from Fazogli and *Passer domesticus chephreni* from Gîza, near Cairo.

Robinson on Malayan Birds.

[List of a small collection of Birds and Mammals from Gunong Kerban, Perak. By Herbert C. Robinson, M.B.O.U. Journ. Fed. Malay States Museums, Kuala Lumpur, v. 1914, pp. 23–27.

On a further collection of Mammals and Birds from the hills of Negri Sembilan. By H. C. Robinson, M.B.O.U., and C. Boden Kloss, M.B.O.U. Ibid. pp. 51–57.]

The first of these short papers deals with the fauna of Gunong Kerban, a mountain in Perak, near the Perak-Kelantan boundary, which attains a height of 7170 ft., the second highest elevation in the peninsula. This is the first time any zoological collections have been made on this mountain, and they unfortunately proved to be of little special interest, as the species found were almost entirely identical with those in the Batang Padang mountains, about 40 miles farther south. Forty species are recorded.

The second paper deals with further collections made in the hills of Negri Sembilan, a state lying southwards from Perak, whence 72 species are here noted.

Salvadori and Festa on the Hawfinch of Sardinia.

[Nuova specie di Frosone della Sardigna. T. Salvadori ed E. Festa. Boll. Mus. Zool. Anat. comp. Torino, vol. xxxix. 1914, no. 681, pp. 1–2.]

Count Salvadori proposes to distinguish the Hawfinch of Sardinia under the name *Coccothraustes insularis*, sp. n. It has the underparts greyish brown with a rufous-brown tinge and is slightly smaller than the typical mainland form.

Schalow on Müller's Calamoherpe brehmii.

[Über "*Calamoherpe Brehmii*" Müller. Von Herman Schalow. Journ. f. Ornith. 1914, pp. 104–110, pl. 3.]

In this little paper Dr. Schalow elucidates the history of an obscure little bird first described by Joh. Mat. Bechstein in his "Gemeinnützige Naturgeschichte Deutschlands" (Leipzig 1795, p. 669), under the name of *Motacilla fasciata*.

The plate which is reproduced shows it to be a Reed-Warbler with a curious narrow subterminal band of orange-red across the tail-feathers. Bechstein states in his description that he only once met with a single example, and this in a secluded spot in the "Thüringer-wald." It is next mentioned by C. L. Brehm in his "Handbuch der

Naturg. aller Vögel Deutschlands" (1831, p. 447). Here it is referred to by the name *Calamoherpe Brehmii* Müller. This latter description has until now escaped the notice of bibliographers.

Herr Schalow has recently found in the library of the ornithological department a manuscript description with a plate, which is here reproduced, by "Herr Canzelist Müller in Brünn," from which Brehm's quotation and description are undoubtedly drawn. This now forgotten naturalist seems to have also obtained a single example of this curious aberration near Brünn, in Austria.

In commenting on this Herr Schalow gives some instances which have come to his notice of similar variations in other species as, for instance, in *Turdus torquatus*, *T. musicus* and *T. merula*; also in *Prunella modularis* and *Sylvia curruca.*

Schalow on the Nutcracker in Thuringia.

[Über das Brut-Vorkommen von *Nucifraga caryocatactes caryocatactes* L. in Thüringen. Von Herman Schalow. Journ. f. Ornith. 1914, pp. 148–156, map.]

In this paper Herr Schalow discusses the breeding-range of the two forms of Nutcracker in Germany, for it has recently been shown that the so-called Siberian or Thick-billed form, *Nucifraga c. macrorhynchus,* breeds as far west as East Prussia. The typical *N. c. caryocatactes* breeds in the mountains of southern Germany, from the Black Forest to the Reisen-gebirge, which lie on the borders of Bohemia and Silesia, and though there appears to be an outlying breeding-colony in the Harz the bird does not nest in the Thuringian Mountains, which appear to be quite suitable for it.

In this paper the author examines the evidence which has from time to time been brought forward to prove that the Nutcracker breeds in Thuringia, but comes to the conclusion that it does not, and never has done so. The understanding of the paper is greatly facilitated by a sketch-map showing the breeding-places, and also the mountainous regions where you might expect to find the Nutcracker breeding, but do not.

Stresemann on the Birds of Ceram.

[Die Vögel von Seran (Ceram). Aus den zoologischen Ergebnissen der II. Freiburger Molukken-Expedition. Von Erwin Stresemann. Nov. Zool., Tring, xxi. 1914, pp. 25–153, pls. iii.-v.]

One of the East India Islands at which Mr. Stresemann spent a good deal of time during his recent expedition was Ceram, or, as he prefers to call it, Seran. He was there from April 29 to December 26, 1911, and obtained a fine collection of 539 examples of 118 species.

Though the coastal region of Ceram is well-known and has been often visited by naturalists, few seem to have penetrated into the interior of the island, and it was here that Mr. Stresemann's efforts were chiefly directed. The highest peak, Gunung Pinaia, reaches an altitude of 2760 m. (circa 8000 ft.), and collections were made here and on other high mountains.

In this paper is also included an account of the birds collected in the same island by the late Mr. W. Stalker, in 1909, for the Natural History Museum, before he went to Dutch New Guinea with the B. O. U. Expedition, and where he unfortunately lost his life.

The list of species dealt with numbers 153, and includes new subspecific forms of *Hemiprocne*, *Dendrobiastes*, *Myiagra*, *Pachycephala*, *Androphilus*, *Zosterops*, *Erythrura* and *Dicrurus*, all described from Ceram. In addition a new *Megapodius* is described from Buru, and a new *Zosterops* from Ternate, while two new Terns, *Sterna bergii thalassina* and *Sterna sumatrana mathewsi*, are distinguished from the southern Indian Ocean, a proceeding which seems hardly consonant with the title of the paper.

In addition to excellent field notes in the case of all the birds collected by himself, Mr. Stresemann adds some interesting historical notices of many of the larger birds, chiefly from the work of Francois Valentyn, published in 1726.

The moult of *Eos bornea*, *Merops ornatus*, *Aplornis metallicus*, and of *Graucalus n. melanops* is described in detail, and an accouut is given of the growth of the curious beak of *Rhyticeros,* the corrugations of which have been supposed to indicate the age of the bird. This, Mr. Stresemann believes, is not the case.

A coloured plate illustrates *Oreosterops pinaiæ* and *Stigmatops monticola*, new species previously described, and *Androphilus d. musculus,* here described for the first time.

Stresemann on the History of the Paradise-bird.

[Was wussten die Schriftsteller des XVI. Jahrhunderts von den Paradiesvögeln? Ein Beitrag zur Geschichte der Ornithologie. Von Erwin Stresemann. Nov. Zool., Tring, xxi. 1914, pp. 13–24, 2 pls.]

The traffic in the plumage of the Paradise-bird commenced some time previous to the discovery of the Aru Islands or New Guinea, and the earliest notice of the birds in print is believed by Mr. Stresemann to be that of the Papal Secretary, Gian Francisco Poggio Bracciolini, who published in 1492, at Milan, a work entitled, "India recognita." The information contained in this was chiefly derived from Nicolo de Conti, a Venetian merchant, who travelled in the east from 1415 to 1440, and spent some nine months in Java. He alludes to certain birds found in Java, of the size of a dove, with long tails and wings which are used as ornamental head-dresses.

About a hundred years later, in 1521, Magalhaen's expedition reached Tidore in the Moluccas, and two Birds of Paradise were given to Elcano, now the commander of the expedition, to take back to the King of Spain.

Mr. Stresemann has traced out in detail all these old allusions to the Bird of Paradise, and has also discovered the origin of Aldrovandi's *Manucodiata prima* and *Manucodiata secunda,* in some interesting old water-colour drawings by an unknown Italian artist of the 16th century, now preserved in the Tring Museum.

Thayer and Bangs on Siberian Birds.

[Notes on the Birds and Mammals of the Arctic coasts of East Siberia. Birds by John E. Thayer and Outram Bangs. Proceedings of the New England Zoological Club, v. 1914, pp. 1–66.]

This is an account of a collection made by Mr. Johan Koren chiefly at the mouth of the Kolyma River in north-east Siberia. Mr. Koren, in the summer of 1911, sailed his schooner through Behring Strait and along the north coast of Siberia to the mouth of the Kolyma River, where larch forest occurs and where he wintered. He set off again in June 21 of the following year, but was caught in the ice and wrecked before he reached Behring Straits. He saved most of his collections and "cached" them, got out overland, and returning the following spring was able to recover them intact. He must have indeed been a man of uncommon grit.

The list of birds is a very interesting one and well worthy of study. Although the winter climate was very severe—85° below zero of Fahrenheit was not uncommon—there were a good many winter birds. Siberian Jay, Raven, Holböll's Redpole, Hawk Owl, Snowy Owl, Short-eared Owl, Gyrfalcon, *Tetrao parvirostris*, and *Lagopus lagopus koreni*, the last-named a new subspecies, all seem to be able to exist in this arctic climate.

It is curious that though Buturlin found a large breeding colony of Ross's Gull (*Rhodostethia rosea*) at the Kolyma delta in 1905, and although Mr. Koren was informed that these birds were abundant and bred there in 1911, he himself in 1912 was only able to find one stray example of this beautiful Gull.

Three American species are here added to the list of Palæarctic birds—*Pisobia pectoralis*, *Haliaëtus leucocephalus alascanus*, and *Hylocichla aliciæ aliciæ*, while a number of new subspecies are proposed: *Lagopus lagopus koreni*, *Circus cyaneus cernuus*, *Budytes flavus plexus*, and *Otocorys alpestris euroa*.

Walpole-Bond on rare British Birds.

[Field-studies of some Rarer British Birds, by John Walpole-Bond. Pp. ix+335. London (Witherby), 8vo. 7*s.* 6*d.*]

Mr. Walpole-Bond here gives us an account of his own field-studies of what he considers to be "some rarer British birds," although why he includes the Short-eared Owl in this category is not easy to explain. The following seventeen species are discussed under this heading:—(1) Dartford Warbler; (2) Pied Flycatcher; (3) Cross-bills in Sussex; (4) Cirl

Bunting; (5) Chough; (6) Raven; (7) Wood-Lark; (8) Short-eared Owl; (9) Hen-Harrier; (10) Common Buzzard; (11) Golden Eagles in Scotland; (12) Golden Eagles in Ireland; (13) Red Kite; (14) Peregrine; (15) Hobby; (16) Merlin; (17) Gadwall; (18) Black Guillemot. Each bird is dealt with in a separate chapter, from the author's personal observations. The nesting habits of each species are described in great detail and the local distribution carefully noted. Mr. Walpole-Bond considers many of our "rarer birds," amongst which may be specially mentioned the Dartford-Warbler, Buzzard and Peregrine, to be much less rare than is generally supposed. The reverse, however, must be regretfully said of the Hen-Harrier, Kite and the Irish Golden Eagle. Chapter xiv., which deals with Peregrine Falcons, is perhaps the most pleasing account which Mr. Walpole-Bond has written. Having stated that he visited 70 eyries between 1904 and 1912, the author continues:—". . . . there is hardly a headland or cliff range of any altitude round our entire coast-line . . . . . where a pair of these noble birds does not at least attempt to breed annually: while with some few modifications the same may be said for certain inland mountain-ranges in Ireland, Cambria, the Lakes, Yorkshire and Scotland. . . . ."

It must be remarked that the style in which the essays are written is not on a par with the matter which they contain. The use which the author makes of brackets seriously detracts from the pleasure which might otherwise be gained from a perusal of his work. Mr. Walpole-Bond shows himself to be an enthusiastic and careful observer, and his book may be confidently recommended to every student of British bird-life.

Aquila.

[Aquila. Zeitschrift für Ornithologie. Redact. Otto Herman. xx. pp. 1-585, Budapest, 1913.]

The greater part of the stout volume of 'Aquila,' which is the organ of the Central Bureau for Ornithology of Hungary, is taken up with reports on the spring migration in that country in 1912, on which there are articles contributed by Dr. K. Lambrecht, K. Hegyfoky, Dr. Weigold, L. Schenk, and the Editor. The general conclusion seems to be that the migration during March was earlier, and that from March 31 to May 7 was distinctly later than the normal, due to the bad weather which occurred at the end of March and beginning of April. The amount of material—observations recorded—is very large, and it is all plotted out for each species according to a geographical plan.

There are also several articles dealing with the ringing of birds in Hungary. The three species chiefly chosen for this purpose are the White Stork, the Swallow, and the Black-headed Gull, of which 628, 1166, and 684 respectively were ringed. The Storks travelled south to South Africa (4 examples recaptured) and south-east to Muscat, in southern Arabia, a new line of migration. The Black-headed Gulls seem to travel chiefly south-west to Italy and Tunis. The ringing of Swallows seems to have clearly brought out the fact that individual birds nearly always return to the same spot, and even to the same nest, year after year. One bird in particular, ringed in 1908 by Peter Müller, is known to have returned to the same nest for six successive years.

An important anatomical paper by Dr. Greschik deals with the submaxillary glands of various species of birds, and gives some account of their secretions and their use in digestion. This is illustrated by two plates. Finally, there are two papers on fossil birds; one, by Dr. Shufeldt, on the affinities of an extinct Ostrich-like form, *Diatryma gigantea* Cope, and *D. ajax* Shufeldt, from eocene beds in Wyoming, U.S.A., and another, by Dr. Lambrecht, giving a list of bird-remains chiefly of quaternary age found in various caves in Hungary and now in the collection of the Central Bureau.

There are also a number of shorter papers which we cannot even give a list of. As previously, 'Aquila' is printed bi-lingually in Magyar, and either German or English, in parallel columns.

Cassinia.

['Cassinia. A Bird Annual.' Proceedings of the Delaware Valley Ornithological Club of Philadelphia, no. xvii. for 1913, pp. 1–68. Philadelphia, 1914, 8vo.]

Apart from articles of purely local interest 'Cassinia' nearly always contains something to interest other ornithologists apart from those of Philadelphia.

Some notes on Alexander Wilson, who died in 1813, just one hundred years ago, by Mr. Witmer Stone, has the first place in the present number. Wilson died in the prime of life at the age of forty-seven, leaving his great work on "American Ornithology" little more than half completed. With Andubon, he occupies the same position as Yarrell in England, and the Naumanns in Germany, and as he lived and died in Philadelphia, it is appropriate that the centenary of his death should be noticed in 'Cassinia.' A photograph of what appears to be a characteristic and artistic statue, by Mr. Alexander Calder, now placed in the library of the Academy of Natural Sciences, form a frontispiece of the number. Wilson is represented in hunting dress, with his gun lying on the ground beside him, bending over a freshly-killed bird which he is studying intently.

The editor, Mr. R. T. Moore, writes at length on the songs of the Oven-bird (*Seiurus aurocapillus*) and reduces several variations of them to musical notation; Mr. Samuel N. Rhoads contributes an account of a bird-roost which he has recently discovered in New Jersey. This is a sandy knoll covered with pines above and deciduous trees below. Here come every evening, in very large numbers, birds of different species to roost, such as Starlings, Grackles, Crow-Blackbirds, Flickers, American Robins and many others.

Other papers deal with the local Fish-eating birds by H. W. Fowler, a census of Turkey Buzzards in Delaware, and a report on the spring migration of 1913 in the Delaware Valley.

Journal S. African Ornithologists' Union.

[The Journal of the South African Ornithologists' Union. Vol. ix. 2 parts, 130 pp. July and December, 1913.]

One of the longest articles in the present volume is by Mr. Austin Roberts, of the Pretoria Museum, who writes a most interesting account of his observations on the birds of the "bushveld" some twenty-five miles north of Pretoria, and of the nests and eggs he has obtained in this district. He still maintains, and we can see no valid reason for doubting his views, that the Pin-tailed Widow-bird (*Vidua serena*) is parasitic, laying its eggs in the nest of the Common Waxbill (*Estrilda astrilda*). He also proposes a new subspecies, *Poliospiza gularis transvaalensis*, for the Transvaal form of the Streaky-headed Seed-eater. In a second paper, "Some Rambling Notes on Birds," Mr. Roberts describes how he found the nest and eggs of *Anthus chloris* and *Heteronyx ruddi*, which appear to have been previously unknown, in the Wakkerstroom district, and writes on the habits of the Grass-Warblers (*Cisticola*), on which he has recently published a study in the 'Annals' of the Transvaal Museum.

From the pen of Mr. Swynnerton we have a charming account of a pair of tame Ground-Hornbills (*Bucorax cafer*), which he had on his farm in the Melsetter district of Southern Rhodesia for some time. Apart from their human characteristics and their interest as pets, Mr. Swynnerton was anxious to make use of them for certain experiments with regard to the palatability or otherwise of various insects, and he found that, especially when they were hungry, they were far from discriminating, though even they will normally refuse Acræid and Danaine butterflies.

Mr. Haagner, the Editor, contributes an article on the White Stork in South Africa, reprinted from 'Aquila'; as many as fifty-five birds, ringed in Europe, have up to now been captured in South Africa, and recently a few individuals have been noticed to remain through the winter, though the greater number, no doubt, only come for the southern summer, from September to March. Mr. Haagner also writes on the nidification of *Francolinus sephæna* in the Pretoria Zoological Gardens, and on the habits and distribution of the Secretary Bird in South Africa.

The South Australian Ornithologist.

[Vol. i. No. 1. January, 1914. 24 pp.]

This new journal, of which we have recently received the first number, is the organ of the South Australian Ornithological Association, and is edited by a committee of which Mr. F. R. Zietz is the President, and is presumably published at Adelaide, though there is no mention of the fact on the cover or elsewhere. It would be well to give this information in future for the benefit of bibliographers and others interested.

The number opens with some account of the history of South Australian Ornithology, by Mr. R. Crompton, from which we learn that a museum was started in Adelaide so long ago as 1855, and that the Association itself dates from 1899.

The principal paper in the part is by Mr. Zietz, and deals with a collection of birds made by M. W. D. Dodd, in Melville Island, Northern Territory, for the South Australian Museum. In less than two months Mr. Dodd was able to secure examples of 85 species, 30 of which are additional to those collected for Mr. G. M. Mathews by Mr. Rogers and recorded in a recent number of the 'Austral Avian Record.' We fear Mr. Zietz, however, has not seen the January number of 'The Ibis,' which contains a paper by Mr. Mathews bringing the total number of birds recorded from this island up to 167. Descriptions of six new subspecies are contained in the present paper, and it is to be hoped that these will not clash with those described by Mr. Mathews.

Mr. E. Ashby proposes to name the Forest Kingfisher, of Northern Territory, *Halcyon macleayi cœruleus,* although there are already two forms of the same species described from the same territory.

An interesting notice of the manner in which the seeds of *Loranthus*, a mistletoe-like plant, pass through the body of *Dicæum* without losing their sticky covering, so that they adhere to where they are dropped and subsequently germinate, is communicated by Mr. A. M. Morgan; while Mr. Mellor informs us that the Cuckoo (*Cacomantis rubricatus*) has been observed depositing an egg in the nest of *Acanthiza pusilla*, in the neighbourhood of Adelaide, where it was supposed to be only a winter visitor.

List of other Ornithological Publications received.

Festa, E. Isola di Roda. Escursioni Zoologiche. (Torino, 1913.)

Foster, A. H. The Birds of North Hertfordshire. (Hitchin, 1914.)

Gurney, J. H. Ornithological Report for Norfolk (1913). (Zoologist, May, 1914.)

Lechner, A. A. van Pelt. "Oologica Neerlandica," Pts. 6–7. (The Hague, 1914.)

Schaub, S. Das Gefieder von *Rhinochetus jubatus* und seine postembryonale Entwicklung. (N. Denksch. Schweiz. Nat. Gesell. Bd. IL. Abh. 2, 1914.)

Shufeldt, Dr. R. W. Extreme Emaciation in a Specimen of the Snowy Owl. ('Auk' xxxi. No. 2, 1914.)

Avicultural Magazine. (3rd Series, Vol. v. Nos. 6–8, 1914.)

Bird Lore. (Vol. xvi. No. 2, 1914.)

Bird Notes. (New Series, Vol. v. No. 4, 1914.)

British Birds. (Vol. vii. Nos. 11, 12; Vol. viii. No. 1, 1914.)

Bulletin Soc. Zool. Genève. (Tome i. Fasc. 20–22, 1913.)

Bulletin S. African Orn. Union. (No. 3, Pt. 1, Feb., 1914.)

The Condor. (Vol. xvi. Nos. 2, 3, 1914.)

The Emu. (Vol. xiii. pt. 4, 1914.)

Irish Naturalist. (Vol. xxiii. Nos. 3–6, 1914.)

Messager Ornithologique. (Vol. v. Moscow, 1914.)

Report of the Poultry Expert for 1912–13. (Adelaide, 1914.)

Sarawak Museum. Twelfth Report for 1913. (Sarawak, 1914.)

The Scottish Naturalist. (Nos. 27–30, 1914.)

Smithsonian Instn. Publ., No. 2256. Opinions Rendered by the International Commission on Zoological Nomenclature. (Opinions 57–65. Washington, March, 1914.)

Zoologica. Scientific Contributions of the New York Zoological Society. (Vol. i. Nos. 12–15, 1914.)

Zoologischer Anzeiger. (Bd. xliv. No. 1–8, 1914.)

XXXI.—*Letters, Extracts, and Notes.*

The following letters have been received:—

Sir,—I have read with great interest Mr. Claude Grant's article on the moults of the Moorhen, and I hope, as time goes on, that we may have many more similar papers in 'The Ibis.' Mr. Grant has done well to emphasize the fact of the simultaneous moulting of the primaries in this species, and it is somewhat surprising to find that it is not mentioned in some of the many books on British birds, as it is a fact well known to many British ornithologists, and I mentioned it some years ago in an article on "Eclipse Plumage and Flightlessness" in the 'Field' (March 24, 1906, p. 441).

As regards the alteration in the colour of the beak, I have repeatedly noticed the change in early autumn in birds in captivity, so that I was not mistaken as to the age of the birds when I noted it in my book, but in the light of Mr. Grant's notes, it is possibly not undergone by every individual.

Perhaps it will make the matter clearer if I quote from some of my notes written at the time:—

March 26. "The female Moorhen has nearly acquired her red bill; this has been assumed during the last fortnight; I am glad to be able to note this positively, as considerable doubt seems to exist on the matter.". . . . The hen loses the red beak every winter, re-assuming it again in spring.

July 26 (of the following year), referring to the same birds which had bred during the season. "The Moorhens are in full moult, two of them flightless. Their bills are much duller, but are not brown as yet."

November 4 (of the same year). "I caught up my Moorhens to-day; only one had a partially red bill, and this has only been assumed during the past three weeks. The bills of the others were greenish yellow, but the future red portion could just be traced." [This last note makes it certain that some males as well as females lose the yellow and red on the bill in autumn; I was evidently in some doubt on this point previously.]

Possibly Mr. Grant was himself mistaken as to the age of some of his birds, as it is always hard to tell the age of a bird from a skin. I have a note of a wild-killed hen, shot early in November, in which the bill was red and yellow but the throat was white—a state of plumage for that time of year which is not mentioned in Mr. Grant's paper.

From careful comparison and other details of plumage, I came to the conclusion that it was adult, and if so, some adults must get a white throat in autumn.

I have notes of several other minor details of plumage not mentioned by Mr. Grant, such as white on the first primary; these details may, however, only be due to individual variation, and as I have not got my skins here to examine, it is not worth mentioning these matters in detail. The fact, however, that Mr. Grant considered the white throat confined to birds of the year may possibly have led him astray on the colour of the bill.

The red plate, as Mr. Grant suggests, undoubtedly swells considerably, especially in the males, at the approach of the breeding-season.

J. LEWIS BONHOTE.

Zoological Gardens, Giza,
April 21, 1914.

SIR,—Mr. C. H. B. Grant's note, in the last number of 'The Ibis' (p. 298), on the fact that the Moorhen casts all its flight-feathers at once, is most certainly "not altogether new." It has been known to me at any rate, and also to many of my ornithological friends, for at least a dozen years. Moreover, in a paper (Ornis, ix. 1897–8, pp. 15–22) dealing with those species which become incapable of flight during the moulting-season, Baron D'Hamonville reviews the results of previous workers and adds observations of his own; his list includes the Moorhen. Mr. Grant seems to have overlooked this paper, and it may be true that "no recent work on British birds" refers to this moult, but then very few recent general works have much to say about moult at all; I should have thought that this moult of the Moorhen, known to Naumann and Mr. Bonhote (by their writings), would also be clearly known to pretty nearly everyone who had at all studied the question of moults.

That wild fowl are flightless during the autumn moult is one of the oldest observations on British birds, and was known in the 12th century (Liber Eliensis II. cap. 105), while in 1533 there was passed an Act of Parliament (25 Hen. VIII. cap. ii.) to prohibit the taking of Wild Ducks and Wild Geese (between May 31 and August 1) when in this state (*vide* Newton's Dictionary, p. 597 note).

Having started on this subject I will make no apology for referring more in detail to Baron D'Hamonville's paper, as in it arise several points which require further investigation. It is practically certain that all Ducks, Geese, and Swans cast all their flight-feathers at once, but to the detailed list given may be added *Bernicla brenta* (Trevor Battye, 'Icebound on Kolguev'); *Œdemia nigra, Somateria mollissima, Cosmonetta histrionica, Harelda glacialis,* on my own observations.

In the list there is cited nearly all the European Rails; also *Alca torda, Uria troile, Fratercula arctica,* and *Colymbus arcticus,* to which may be added *C. septentrionalis* and *Uria grylle* from specimens in my collection. Baron D'Hamonville gives on his own authority (verified by many specimens), *Puffinus anglorum*; I know not whether *all* Petrels cast all their flight-feathers at once, but I have a Storm-Petrel which is moulting its wings gradually. Further observations in this group are desirable. Pallas in 1831 (Zoogr. Ross.-Asiat. ii. p. 207) noted that the Flamingo also moulted its wings in anserine fashion, and this was confirmed by Crespon (Orn. du Gard. p. 397), a fact which to me seems rather remarkable.

But the strangest bird found in this list, and one over which I think there must be some mistake, is *Tetrao tetrix* ♂; this was inserted on the authority of M. Taczanowski (Bull. de la Soc. zool. de France, 1884, p. 303), who further remarks that the female, however, moults in the normal manner. I have both seen and shot several old Black Cock in full moult, whose power of flight did not strike me as being much diminished! and a young male in my collection is casting its flight-feathers in pairs.

Baron d'Hamonville suspects that Grebes also cast their flight-feathers at once, and although I think it extremely probable, I have no specimens to prove it. M. Gerbe noted (Rev. et Mag. de Zool. 1875, p. 271) that the Puffin moulted its wings from the end of March to beginning of May (many specimens); but these, I think, can hardly be *adult* birds, which, at the Faroes at any rate, regularly arrive at their breeding-places on the cliffs on or about April 14. M. Gerbe recorded that *Colymbus arcticus* cast all its flight-feathers simultaneously in April (single specimen); whether this be normal I know not, but all examples of *C. septentrionalis* which I have seen, which were moulting their wings, were doing so in November (see also Zool. 1869, p. 1500); however, Mr. Smalley records (Ann. Scot. Nat. Hist. 1909, p. 141) that he has a flightless specimen of *C. glacialis* shot on Feb. 18.

To revert to the plumage of the Moorhen, there are one or two small points in Mr. Grant's paper to which I should like to refer, though with his main conclusions I agree. Birds in what he calls second plumage (=1st winter plumage) do not always have white throats or even mottled throats; thus one specimen in my collection (Oct. 10) has only the chin white, and in another (Nov. 18) the chin and upper throat is only very faintly ticked with greyish. The frontal shield in a bird in my collection, dated November 1, is as large as that of an adult in January and is dull red while its beak is dull red and dull yellow, and the tibial band is slightly marked with red. I consider that this bird is from an early brood.

The size of the shield is, I think, largely seasonal, and begins to increase in February; I have such birds showing a distinct demarcation between the old shield and the new growth. At this time, too, the surface of the shield and bill scales off, thus producing the brighter colours beneath.

I do not quite understand Mr. Grant's remark that birds all killed in the *same year* must be examined in order to fix times of seasonal moult and plumage. It seems to me more necessary to examine series from about the same dates of hatching, for, as one can find chicks from about the beginning of May to the end of July in any year, so will the subsequent changes in plumage etc., vary accordingly in date.

C. B. Ticehurst.

Lowestoft,
May 12, 1914.

Sir,—I sometimes see "News of Members" in 'The Ibis,' so perhaps some information about the present doings of Mr. H. C. Robinson, Director of Museums, Federated Malay States, and myself might be of sufficient interest to insert in the next number of 'The Ibis.'

We are now commencing an expedition to Mt. Indrapura or Korinchi Peak, 12,700 ft., the highest mountain in Sumatra, which has never been visited by Englishmen or seriously collected on, though the Mid-Sumatra Expedition of about the middle of the last century, appears to have taken home a few things from there when they made the first ascent from the other side.

While we propose to take everything in the way of zoology and botany that we can lay our hands on, birds will be the principal object of our work. This portion of Sumatra is quite unknown ornithologically, for nothing has been done since the work of Beccari and Bock in the Padang Highlands in the late seventies, and of Forbes, who got a few birds on the Dempo to the south during the course of his wanderings in the eighties. So not only do we hope to get new species, but also to rediscover the rare birds obtained by the two former naturalists which have not since been collected.

The results will be shared among the Museums of the

Federated Malay States and those of Tring and South Kensington, which have contributed towards the expenses of the Expedition.

Yours faithfully,
C. Boden Kloss.

Korinchi, Sumatra,
March 21, 1914.

P.S.—We have already obtained the rare Pitta (*P. schneideri*) recently described by Hartert from the Toba District; *Peloperdix rubrirostris, Chalcurus chalcurus*; a *Serilophus* which has apparently not been recorded from the Sunda Islands, *Myophoneus castaneus, Chloropsis venusta*, and *Stoparola cervicrissa*.

Sir,—You may perhaps think it sufficiently interesting to note that I watched, for half an hour or so, a pair of Black Terns at Mitcham, Surrey, on the 2nd inst.

Six of these birds arrived on April 11, but with the exception of the two in question, passed on almost immediately, and the remaining pair left on the 4th inst.

One of the birds frequently sat on a stump in the centre of the rush-grown pond. The other never alighted nor attempted to swim, but continually hawked for insects, occasionally dipping and touching the water after the manner of the swallows.

The flight was remarkably easy and noiseless, and no sound was uttered.

I am,
Yours truly,
Godfrey C. Lambert, M.B.O.U.

Woodcote,
Epsom, Surrey,
May 25, 1914.

Sir,—May I be permitted to make a slight alteration in a statement which I made in Part II. of my paper on my Expedition to the Eastern Canary Islands. On page 232 in the last number of 'The Ibis,' I gave a list of species and subspecies which are confined almost, if not entirely, to the eastern group of islands, and are not represented by any species in any of the western islands with the exception of Gran Canaria. In this list I have included *Erythrospiza githaginea amantum* and *Cursorius gallicus gallicus,* and state that both these species are found on the south-east coast of Gran Canaria, while the Trumpeter Bullfinch is *occasionally* met with in the desert parts of Tenerife. I am not personally very well acquainted with the large island of Tenerife, not having visited the south, I therefore based my remarks on this island largely on Mr. Meade-Waldo's paper ('Ibis,' 1903). Since my paper appeared I have received a letter from Herr von Thanner, who is a resident ornithologist in Tenerife, pointing out that at the present day *Erythrospiza g. amantum* and *Cursorius g. gallicus* are both resident *breeding*-birds in that island.

I am obliged to Herr von Thanner for calling my attention to the fact, as the extended distribution of these two species is a matter of some interest to every student of Canarian ornithology.

I am, Sir,
Yours &c.,
David A. Bannerman.

6 Mores Garden, Cheyne Walk,
Chelsea, S.W.
June 8, 1914.

Sir,—Referring to Capt. Hubert Lynes's very interesting article in your April number "Remarks on the Geographical Distribution of the Chiffchaff and Willow Warbler," I would offer a few observations.

So far as I know the Willow Warbler has not yet been found to nest in Portugal. Large numbers of them pass through on migration during the autumn along the west coast.

They do not winter in this neighbourhood, but probably pass on to Africa across the Straits of Gibraltar, or from the south coast of Portugal to Morocco. That any remain in Portugal during the summer is very doubtful.

Arévalo y Baca in his 'Aves de España,' Madrid (1887), says that the Willow Wren remains through the spring and summer in the centre and north of the Peninsula.

If so, it may be possible that a few may be found also in the higher and cooler mountainous regions of Portugal, though I much doubt it.

Arévalo y Baca also says that Mr. Vayreda assures him that some Willow Warblers pass the winter at Gerona near rivers and streams. If anywhere in Spain, it might be found to nest in Galicia or on the slopes of the Asturian mountains.

The Chiffchaff is found at Oporto all the year round, and has frequently nested during May in the lower branches of the box bushes in my small wood.

The eggs are like those described by Capt. Lynes as laid by the Gibraltar Chiffchaff, and I believe it to be the same bird. The violet shell-marks are wanting. They do not at all resemble in colouring the Chiffchaff's egg, figure 4, Plate 36, in Hewitson's 'Eggs of British Birds.'

I have three eggs from Coimbra. Of these two are spotted with small dark brownish-red spots, and more thickly so at the larger end, while on the third egg the small spots are more evenly distributed.

They are quite different in marking from the eggs of the Willow Wren, which, as a boy, I used to find in England, though the colour is somewhat similar.

I have seen the Chiffchaff at Oporto in every month of the year. It begins to utter its short song in the first or second week in February, and, speaking from memory, it sounds like *chip-chip-chip-chip, weet, wit.* Curiously enough, since I read Capt. Lynes's article in April, I have not heard one sing. It continues its song through the summer, and I have heard it occasionally also in August and November.

Unfortunately this bird has not nested this year in my wood, though it frequented my garden this last winter and spring.

I heard the Chiffchaff's song in June at Caldelas de Túy on the Spanish side of the River Minho, which forms the northern border of Portugal. Not being acquainted with the note of the English Chiffchaff, I did not know of the difference until pointed out by Capt. Lynes.

It has always struck me as curious that while so many insectivorous birds migrate south in the autumn, this smaller and apparently fragile bird keeps with us through the winter, which is sometimes cold, wet, and stormy.

It is of course difficult to feel quite positive that the Chiffchaffs which are seen here in January are the same birds which nest here in May, but the fact that they sing so early as in the commencement of February seems fairly conclusive evidence that they are the same.

Ringing the nestlings seems the only means of clenching the matter. The chances, however, of recovery of one of the few birds which it would be possible to ring would be but remote. Yet a Blackbird, which I ringed during June in the Gerez mountains, was recovered in December of the same year in the same locality.

The migrants which pass through or winter here are remarkably mute as regards song.

In my list of the Birds of Portugal, published in 'The Ibis' in 1888, mention was made of the dialectic difference between the song of the Chaffinch heard in Derbyshire and that in Oporto, but the song of this bird seems to vary somewhat according to locality even in this country and in north Spain.

WM. C. TAIT.

Oporto,
June 15, 1914.

A Naumann Museum in Cöthen.—A Committee has recently been formed in Germany containing not only the names of the principal German ornithologists, but those of other European countries, and including Dr. Hartert and the Hon. Walter Rothschild in England, to commemorate the memory of the Naumann family by the erection of a Museum in Cöthen, wherein are to be deposited the Naumann collection of birds with manuscripts, letters, pictures and other relics.

There were three ornithologists of this name. The father, Johann Andreas Naumann (1744–1826), was born at Ziebigk near Cöthen, and was a landed proprietor, who devoted the greater part of his life to the study of birds.

His son, Johann Friedrich Naumann (1780–1857), also born at Ziebigk, followed in his father's footsteps, and was Professor and Inspector of the Ornithological Museum of the Duke of Anhalt-Cöthen.

Another son of Johann Andreas—Karl Andreas—was a good field-ornithologist, but himself wrote but little.

The elder Naumann's work has the following title: "Naturgeschichte der Land- und Wasser-Vögel des nördlichen Deutschlands und angränzender Länder, nach eigenen Erfahrungen entworfen und nach den Leben gezeichnet. 4 vols. Köthen, 1797–1803. 8vo.

The plates for this work were drawn by Johann Friedrich.

The work of the younger Naumann is entitled:—"Naturgeschichte der Vögel Deutschlands, nach eigenen Erfahrungen entworfen." 13 vols. Leipzig, 1822–1850. 8vo.; and it is this work which is to Germany what Yarrell is to England and Audubon to America.

Anyone wishing to contribute either money or documents or any other object of interest for the Museum, should communicate with Dr. Paul Gottschalk, Markstrasse 4, Cöthen, Germany.

Disputed questions in Nomenclature.—The International Commission on Zoological Nomenclature was first appointed in 1895 by the Third International Zoological Congress, held at Leyden in that year. This Commission or Committee, which now consists of fifteen members, was entrusted with the task of revising and drawing up a Code of Rules of Zoological Nomenclature, which was finally adopted by the Berlin Congress of 1901, and published in English, French, and German at Paris by F. R. De Rudeval.

There are many difficult questions in nomenclature which cannot be dealt with under the rules as contained in the code, or in which the interpretation of the code is doubtful.

The Commission undertakes to investigate such of these questions as are submitted to them by various zoologists, and to give an "opinion" as to the best course to be adopted; but it must be understood that such "opinions" are not necessarily final decisions until they have been verified as amendments to the Code of Rules of Nomenclature and approved of by the Zoological Congress at one of its meetings.

Under the title of "Opinions rendered by the International Commission on Zoological Nomenclature," the Smithsonian Institution at Washington has undertaken to publish the findings of the Commission on these difficult questions. The first batch, "Opinions 1–25," was issued in 1910, and we have recently received the last one, "Opinions 57–65."

As it may not be easy for members of the Union to obtain the "Opinions," and as they deal with many questions which do not directly concern ornithologists, we have thought it may be useful to give shortly the "Opinions" which are of special interest in our own department:—

Opinion 16 deals with the fixing of the type of certain genera of Linnæus, and it agreed that where Linnæus cited in his synonymy, under one of the species in the genus, the generic name as used by pre-Linnean writers, that species is the type of the genus.

For instance, the genus *Alca* was instituted by Linnæus for the Auks, and contained six species: *torda*=Razorbill, *impennis*=Great Auk, *arctica*=Puffin, *lomvia*=Guillemot, *grylle*=Black Guillemot, and *alle*=Little Auk. In the case of "*torda*" the only reference given is "Alca"; the Razorbill was so called by all the older authors from Clusius to Albin. We may therefore consider that "*torda*" is the type of the genus *Alca*. This method of fixing the type holds good with a large number of Linnean genera.

Opinion 38. The Latin names in Tunstall's 'Ornithologia Britannica,' 1771, are to be accepted so far as they can be identified by the references given to Pennant or Brisson. The well-known names *Falco peregrinus* and *Falco æsalon* were both first proposed by Tunstall, and this "opinion" will, we may hope, render them quite secure for the future.

Opinion 48. Brehm's generic names published in 'The Isis' for 1828 and 1830 are in some cases founded on vernacular names or on species which he did not describe until he published his "Lehrbuch Naturg. Vög." in 1823. Such generic names as, for instance, *Monedula*, which was founded on the "Dohle" or Jackdaw, and to which he attached three specific names, all *nomina nuda*, cannot stand.

Opinion 57. The names of birds published by Hasselquist in his "Iter Palæstinum" are not tenable. This work was published in 1757 and is therefore pre-Linnean, but a German translation by Gadebusch was published in 1762, and it has been argued that the names used in the translation should be valid. The Commission are unable to uphold this view.

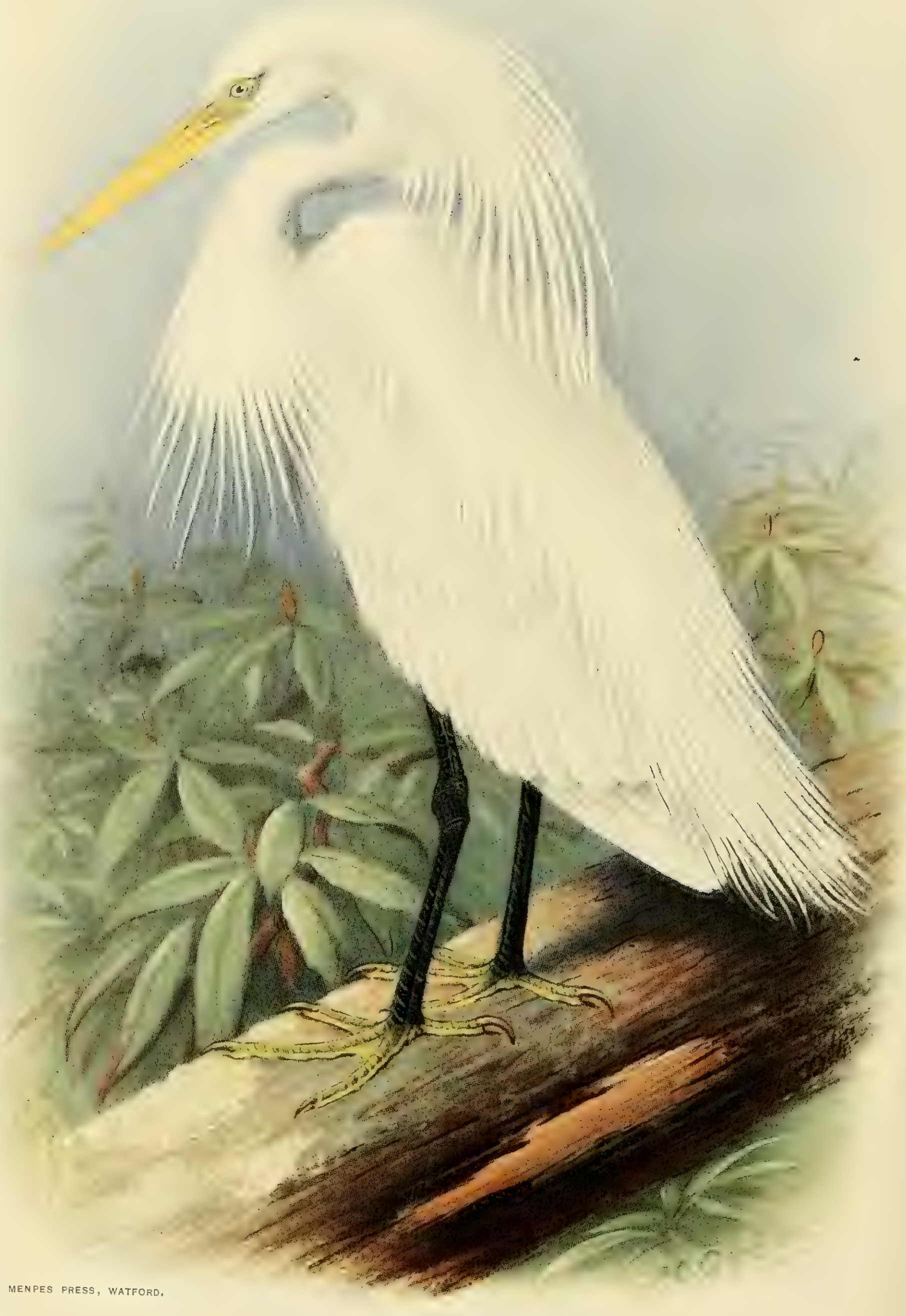
Opinion 61. The generic name given to the American Ground Doves by Swainson is *Chæmapelia*. It is obviously derived from χαμαι=on the ground, and πελεια=a dove, and should be written *Chamæpelia*. Moreover, Swainson corrected what is obviously a *lapsus calami* or a typographical error in the index of his "Classification of Birds," published ten years later in 1837. The Commission are therefore of opinion that this generic name should be amended to *Chamæpelia*.

An Apology.—On page 336 of the last number of 'The Ibis' (April), there is an allusion to Mr. C. G. Danford, who was a Member of the Union from 1874 to 1899, and who has contributed largely to our knowledge of the birds of Asia Minor by his papers published in 'The Ibis' between

1877 and 1880, as "the late Mr. Danford." We have received a letter from Mr. Danford, dated Coudette, Pas de Calais, France, May 29, 1914, in which he writes as follows:—

"Dear Sir,—My attention has been drawn to the fact that 'The Ibis' of April (p. 336) alludes to me as among the things that were. May I ask to be resuscitated."

We offer our most sincere apologies to Mr. Danford for the unpardonable mistake which has occurred and which we are unable to explain satisfactorily. Perhaps it may have come through Mr. Danford's long seclusion from the ornithological world. At any rate, may we hope that now that he has declared himself, he may again contribute to the pages of 'The Ibis' as he did of old.



MENPES PRESS, WATFORD.

HERODIAS EULOPHOTES.

THE IBIS.

TENTH SERIES.

Vol. II. No. 4. OCTOBER 1914.

XXXII.—*On* Herodias eulophotes *Swinhoe.*

By Tom Iredale.

(Plate XX.)

When preparing our Reference List of the Birds of New Zealand ('Ibis,' 1913, pp. 201–63, 402–52), Mr. Mathews and I had to investigate the Herons grouped in the Catalogue of Birds in the British Museum under the name *Demiegretta sacra*.

On p. 405 we accepted Vieillot's name of *Ardea matook* (Nouv. Dict. d'Hist. Nat. vol. xiv. 1817, p. 416) for the New Zealand bird, but no discussion was given. As a matter of fact little was necessary, as the New Zealand race needed only a superficial glance to grant it recognition as a valid subspecies.

Complications elsewhere ensued through the well-known "dimorphism," *i. e.*, white and blue birds breeding together in the same colony. In his 'Birds of Australia,' vol. iii. pp. 450–455, just published, Mathews has fully discussed the statements made concerning these birds and the varied views held by different observers and writers, and has concluded that two species had better be recognised, but he admitted the extreme difficulty of the group. I would agree that conservatism is the best policy at present, and would emphasize the strong argument that in many places, New

Zealand being one, the white birds are absent. In other places white birds may occur alone, and the bird under notice was so classed in the Catalogue of Birds. At first sight to Mathews and myself it differed appreciably, and we dismissed it as a distinct species and not a subspecific form of *Demigretta sacra*.

Mathews (*loc. cit.* p. 448) has also distinguished it as separable from the genus *Demigretta* and proposed for it the generic name *Hemigarzetta*, writing:—

"It (*Herodias eulophotes* Swinhoe, Ibis, 1860, p. 64) recalls *Egretta* almost as much as *Demigretta*. The bill is long and slender, but does not exceed the metatarsus in length: the head is very fully crested with very much developed plumes: the dorsal ornamentation reaches beyond the tail and consists of disintegrated feathers: the breast plumes are lanceolate, but are longer than in *Demigretta*, and much more pronounced; the wing has the first three primaries subequal, the first primary longest, which never occurs in *Demigretta*. The legs are short with exposed tibia, also short, as are also the toes. The short legs and feet place it near *Demigretta*, as *Egretta* has long legs and feet. The frontal covering of the metatarsus consists of transverse scutes as in *Demigretta* as well as *Egretta*."

I now find that Mathews had overlooked a paper by C. B. Rickett in 'The Ibis,' 1903, pp. 220–1, where careful comparisons were made and *Herodias eulophotes* was shown to be distinct from *Demigretta sacra*, but the species was retained in *Herodias*, Rickett noting, "In habits *H. eulophotes* is an Egret. It frequents rice-fields, or the sides of inland ponds and creeks, and often nests on the same trees as *H. garzetta*. My collectors have never met with it on the coast." This confirmation of Mathews's investigations is pleasing, and the generic location is the only problem. Genus-lumpers will probably include it in *Egretta*, considering the white plumage, though ostensibly ignoring coloration, as a valuable character. It cannot remain in *Herodias*, however, as the white plumage must be subordinated to the great difference in structure.

In the Check List of the American Ornithologists' Union, 3rd ed., 1910, the Snowy Egret (p. 96) is included in the genus *Egretta*, though its nuptial ornaments differ from those of the type of the genus *Egretta*. This bird shows an approach in this character to *H. eulophotes*, but a fact worth emphasis is that Rickett records that the latter "nests on the same trees as *H. garzetta*" (the type of *Egretta*). This at once suggests that a different line of evolution may have been followed by the present bird and that the white coloration is another example of convergence. It should be remembered that we have white as a predominant colour throughout many of the Ardeine birds, and that very different birds as regards structure agree in having a pure white coloration. My own researches tend to show that this recurrence of white has misled previous investigators in many ways, the lumping of this bird with *Demigretta sacra* being a glaring instance. Rickett states that this bird is becoming, if it has not already been, exterminated by plumage-hunters. In consequence, it may be a very rare bird, and as it is so distinct and has never been figured satisfactorily a plate is here given, which shows at a glance the Egret-like plumage and its unlikeness to any Reef Heron (*Demigretta*). Students who have not access to specimens will thus be enabled to gauge its relationships to a fair extent, and all will certainly agree with its dismissal from *Demigretta*, wherever else they may be inclined to place it.

The preceding was written and the plate prepared under the impression that the bird had not been previously figured. While it was in the press the Editor, Mr. W. L. Sclater, drew my attention to a plate and discussion of the bird's status in the 'Birds of Celebes' by Meyer and Wiglesworth. The succeeding notes are therefore due to the Editor's intervention, for which my best thanks are here tendered.

When Swinhoe described this form from Amoy, China (Ibis, 1860, p. 64), he characterised it thus:—"This differs from *H. garzetta* strikingly in having a yellow bill, full-crested occiput, and shorter legs. It is a rare and solitary species." The coloration of soft parts is given as :—"Legs greenish black ; feet olive-brown, patched in places with yellow. Bill orange-yellow, becoming flesh-coloured and purplish on the lores and round the eye. Irides pearl-white."

In 'The Ibis,' 1863, p. 418, Swinhoe recorded it as "pretty common" in Formosa, where it appeared to breed in company with other Herons, noting :—"The female is a little larger, but the sexes are not otherwise to be distinguished. This Egret has a fine clear yellow bill in summer, becoming tinged with brown in winter. Its cere is tinged with green and purple ; its irides light pearly yellow. Its legs are in summer black, in winter greenish brown : its feet and claws are greenish yellow. From *H. garzetta* it can at all seasons be distinguished by its light and shorter bill, and by its much shorter legs. It loses its crest early in August."

Blyth (Ibis, 1865, p. 37) synonymised Gould's *H. immaculata* with *H. eulophotes* Swinhoe, and described a bird killed at Mergui in South Tenasserim. The description of the crest reads like that of this species, but the note "Australian examples quite agree" cannot refer to crested examples, as no crested Australian specimen was then known.

Meyer and Wiglesworth reinstated this species under the name *Herodias eulophotes*, and gave a coloured plate. As a vernacular they proposed Short-legged White Egret. They gave a full review of the accounts of this bird, and were inclined to follow Blyth in accepting Gould's *H. immaculata* as a synonym. Their remarks were based upon a specimen procured at Mantehage Island in April in full breeding plumage, and another immature obtained by the cousins Sarasin in October. They still retained the species in *Herodias*, considering the differences in the bill, wing-formation, leg-length, and breeding ornaments as of less value than the white coloration, a view still endorsed by some workers.

When Mathews wrote his account of Gould's *H. immaculata* no specimen showing breeding plumes was available, but since then he has received adults in this stage and these show the two occipital plumes seen in *Egretta garzetta* (Linné) and confirm the classification of that form generally accepted. Mr. Mathews has shown me these specimens, and consequently there can be no confusion now between Gould's *H. immaculata* and Swinhoe's *H. eulophotes.*

Regarding the generic name *Herodias,* it has been indicated by the reviewer in the 'Auk' that this name must be construed as an absolute synonym of the earlier *Egretta* of Forster and therefore pass right out of use in any connection.

Mr. Mathews proposes to show that the correct substitute for *Herodias* as used in the 'Catalogue of Birds in the British Museum' is *Casmerodius* of Gloger.

The present species comes much nearer to *Egretta* than to *Casmerodius,* as above noted.

The following are the most important references to this bird, from which it will be seen that it is found along the coastal provinces of China, in Formosa, and possibly also in Japan and Celebes :—

Herodias eulophotes Swinhoe, Ibis, 1860, p. 64 : Amoy ; id. Ibis, 1863, p. 418 : Tamsuy river, Formosa ; La Touche, Ibis, 1892, p. 488 : Foochow and Swatow ; Meyer and Wiglesworth, Bds. Celebes, ii. 1898, p. 824, pl. xliv. : Celebes (Sarasin) ; Rickett, Ibis, 1900, p. 218 : Foochow ; id., ibid. 1903, p. 220 : Fohkien ; La Touche and Rickett, Ibis, 1905, p. 64 : Fohkien ; Ogilvie-Grant and La Touche, Ibis, 1907, p. 262 : N. Formosa.

Demiegretta sacra (Gm.) ; Sharpe, Cat. Birds Brit. Mus. xxvi. 1898, p. 137 [part.].

Hemigarzetta eulophotes (Swinh.) ; Mathews, Bds. Australia, iii. 1914, p. 448.

XXXIII.—*Some Remarks on the Subspecies of Crested Larks* (Galerida cristata) *found in Egypt.* By M. J. Nicoll, M.B.O.U.

The following remarks are based on a series of 136 specimens of *Galerida cristata* brought together by the writer during seven and a half years' residence in Egypt, as well as on a careful examination of the entire series of Egyptian Crested Larks in the Tring Museum including Brehm's types of *G. c. nigricans*, *G. c. altirostris*, and the type of *G. c. caroli* Hartert.

It is a somewhat remarkable fact that no fewer than five distinct forms of *Galerida cristata* are found as residents in Egypt north of Halfa *. For convenience I append a short key.

1. Galerida cristata nigricans.
   Very dark above and heavily marked with black on the underparts.
   Wing-measurement of male, 100–106 mm.
2. Galerida cristata altirostris.
   Paler above than *G. c. nigricans* and the marking on the underparts paler and less clearly defined.
   Wing-measurement of males, 98–103·5 mm.
3. Galerida cristata mœritica.
   Paler above than *G. c. altirostris*, the underparts usually whiter and clearly marked with black streaks on the breast.
   Wing-measurement of males, 101–108 mm.
4. Galerida cristata caroli.
   Pale sandy, greyer in winter plumage.
   Wing-measurement of males, 100–104·5 mm.
5. Galerida cristata brachyura.
   Somewhat intermediate between *G. c. caroli* and *G. c. altirostris*. See remarks under this subspecies.

I do not for a moment pretend that the following remarks are "the last word" on the subject, as I have yet much ground to go over before I can ascertain the exact range of each race of this interesting species, and it is possible that in the oases of the western desert undescribed forms yet await discovery. The object of the present paper is (1) to place on record the results of a careful study of existing material, (2) to attempt to straighten out this somewhat difficult and little understood subject.

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* In the Egyptian Sudan *G. c. nubica* and *G. c. isabellina* are found between Halfa and Khartoum (the former is very nearly allied to *G. c. caroli*). Neither have been recorded from Egypt.

Recently three papers have been published on Egyptian birds in which Crested Larks figure largely. I refer to :—

1. Lynes and Witherby, "On a Collection of Birds from the Mediterranean." Ibis, 1912, p. 121.
2. C. B. Ticehurst, "Birds of Lower Egypt." Zoologist, 1912, pp. 41–59.
3. Paul Kollibay, "Bemerkungen über die Haubenlerchen von Suez, Sinai, und Palästina." Ornith. Monatsber. xx. 1912, pp. 113–115.

The first two of these papers are based on collections of birds made during short visits to Egypt, and the last is a careful paper on the form of *Galerida cristata* from the neighbourhood of Suez. I have had the good fortune to examine all the specimens of Crested Larks referred to in Messrs. Lynes and Witherby's and Dr. Ticehurst's papers.

Messrs. Lynes and Witherby have come to the same conclusions as I have, and their statements on the ranges of the different forms treated of are, as far as they go, and they are necessarily somewhat limited, perfectly correct. I regret that I cannot agree with Dr. Ticehurst in his review of the Crested Larks obtained during his short visit to Egypt, but his material was very small for such a difficult subject.

In working out the ranges of the different forms of *Galerida* in Egypt, it must be remembered that where two or perhaps three forms meet, interbreeding must and undoubtedly does take place, and some individuals are consequently difficult to place with certainty, and that slight variations take place at extremes of the range. It is only by collecting and studying large series from as many localities as possible that any definite conclusions can be made and real facts ascertained.

Galerida cristata nigricans Brehm.

Galerita nigricans Brehm, Vögelfang, 1855, p. 123.

Galerida cristata nigricans Brehm; Hartert, Vögel pal. Fauna, i. 1904, p. 227.

This, the darkest form of the Egyptian Crested Lark, frequents the black soil of the Delta. I have specimens from as far east as Gheit el Nassara, near Damietta, where in January I found it and *G. c. altirostis* consorting together in small parties.

From the west Capt. Flower has collected specimens at Sidi Salem, south of Lake Borolos, and Commander Lynes has found it nearly as far west as Esbet Kourched, where it again meets with *G. c. altirostris*.

The southward limits of *G. c. nigricans* appear to be near Cairo, where I have obtained examples at Boulac Dacrour.

We have no records of the occurrence of this darker form from north of Lake Borolos, the Mediterranean coast being inhabited by *G. c. altirostris* and *G. c. caroli*.

The delta subspecies is easily recognisable by the very dark coloration of the back and the large black blotches on the upper breast.

The wing-measurement of males ranges from 100–106 mm.

Galerida cristata altirostris Brehm.

Galerita altirostris Brehm, Vögelfang, 1855, p. 124.

Galerida cristata altirostris Brehm; Hartert, Vög. pal. Fauna, i. 1904, p. 233.

This form of Crested Lark can be traced on the Mediterranean coast of Egypt from Mariut on the west as far east as Damietta, southward on both sides of the Nile south of Cairo to Aswan. It generally skirts the breeding range of *G. c. nigricans* in the delta and keeps to the poorer soil near the desert edge, but in places it meets with, and possibly interbreeds with, the latter.

At its northern limit *G. c. altirostris* meets, and apparently interbreeds with *G. c. caroli*, for I have examined a specimen shot by Dr. C. B. Ticehurst on an island in Lake Mareotis which was paired with a *G. c. caroli*. Dr. Ticehurst identifies the bird in question (*G. c. altirostris*) as *G. c. mœritica* (*cf.* Zoologist, 1912, p. 48), an identification with which I cannot agree.

G. c. altirostris was originally described from Kom Ombo in Upper Egypt, and the type specimen shot in October is a freshly moulted bird of a greyish-brown coloration. I can, however, exactly match it with a specimen from Damietta.

This subspecies differs from *G. c. nigricans* in being paler above and in having the spots on the breast generally smaller, less black, and usually less distinct; this last feature is especially noticeable in freshly moulted birds.

Wing-measurement of males, 98–103·5 mm.

Galerida cristata mœritica Nicoll and Bonhote.

Galerida cristata mœritica Nicoll and Bonhote, Bull. B.O.C. xxiii. 1909, p. 101.

In our original description Mr. Bonhote and I wrongly compared this race with *G. c. nigricans*, whereas it is nearest to *G. c. altirostris*; this was due, however, to the fact that it was not till a year later that we discovered that *G. c. altirostris* was found in Lower Egypt, all our specimens having previously been "lumped" with *G. c. nigricans*.

Galerida cristata mœritica was described from specimens obtained by us in March 1909, on the southern shore of Lake Kerun in the Fayum, whence I have since procured a large series of examples, both in spring and winter.

This form is distinguishable from *G. c. altirostris* by the paler coloration of the upper parts, the usually slightly whiter under parts especially noticeable in spring examples, by the usually smaller and more clear-cut spots on the breast, and by its longer wings, a series of 28 males having an average wing-measurement of 103·4 mm., whereas a similar number of males of *G. c. altirostris* have an average wing-measurement of 100·15 mm.

It is not always easy, and sometimes perhaps impossible, to separate some individuals of *G. c. mœritica* from *G. c. alti-*

rostris, but with a sufficient series of each form the differences are quite appreciable.

I have not yet seen a true specimen of *G. c. mœritica* from outside of the Fayum, and I believe this race to be restricted to that oasis.

Wing-measurement of males ranges from 101–108 mm.

Galerida cristata caroli Hartert.

Galerida cristata caroli Hartert, Vög. pal. Fauna, i. 1904, p. 234.

This, the palest of all the Egyptian Crested Larks, was described from specimens collected by the Hon. N. Charles Rothschild in the Wadi Natron in Lower Egypt.

Outside the Wadi Natron the distribution of this form is somewhat erratic. The extreme western limit of its range is unknown, but I have specimens from Dabaa, 160 miles west of Alexandria on the Mediterranean coast, collected by T. W. Russell Bey and Mr. T. E. S. Armstrong.

On the islands in Lake Mareotis it breeds and, as we have pointed out, it interbreeds there with *G. c. altirostris*. On the promontory of Abu Kir, near Alexandria, it occurs as a breeding species, and there it appears to form a small isolated colony on the sandy ground close to the sea. In June 1913 it was the only form of *Galerida* I found there, though at Montaza, a few minutes train journey south of Abu Kir, I found *G. c. altirostris* abundant, and the latter was extremely common immediately to the east and along the north shore of Lake Edku, where it was feeding young.

On the east *G. c. caroli* breeds on the shore of Lake Menzaleh, near the Suez Canal, and Capt. H. Lynes found it near Mahsameh between Ismailia and Cairo (Ibis, 1912, p. 134), and I obtained a straggler at Inchas, within the range of *G. c. nigricans*, on 13 Feb. 1911, after a gale from the north.

A series of four examples from Dabaa collected in January, February, and March, are paler on the upper side than most of those from the Wadi Natron collected in March, but I have specimens from the latter typical locality which exactly match them.

This form is recognisable at once from the other forms of Egyptian *Galerida* by its pale, sandy coloration, while so far as we know it is found only on sandy soil, either near the sea coast (Abu Kir and Dabaa), desert country near the cultivation (Mahsameh), or sandy country near salt or brackish lakes (Wadi Natron and Lake Menzaleh).

In habits it is very shy, especially during the breeding season.

Wing-measurement of males, 100–104·5 mm.

Galerida cristata brachyura Tristram.

Galerida brachyura Tristram, P. Z. S. 1864, p. 435.

Galerida cristata brachyura Tristram; Hartert, Vög. pal. Fauna, i. 1904, p. 234.

At present I have only been able to examine five specimens of the Crested Lark from Suez, all of which are in full moult. Such being the case, I provisionally follow Dr. Paul Kollibay and place them under the above form. How far this race extends along the Red Sea coast I have no information. The type of this subspecies was obtained at Ghor at the southern end of the Dead Sea in Palestine.

On some future occasion, after I have been able to examine more specimens, I hope to go more fully into the subject of this race.

For the convenience of my readers I give a short table showing the ranges of the different races of Crested Larks in Egypt:—

Galerida	*cristata*	*nigricans.*	Delta.
,,	,,	*altirostris.*	Mediterranean coast to Aswan and possibly farther south.
,,	,,	*mœritica.*	Fayum.
,,	,,	*caroli.*	Northern Egypt (local).
,,	,,	*brachyura.*	Red Sea coast.

The wing-measurements of all the specimens examined were made with calipers from the carpal joint to the tip of the longest primaries without flattening the primaries along the measure.

XXXIV.—*With the Tropic-birds in Bermuda.*

By Karl Plath, Chicago, U.S.A.

(Plates XXI.–XXIV.*)

During a recent visit to Bermuda, that idyllic archipelago in the Atlantic, I had numerous opportunities of observing the beautiful Tropic-bird known locally as the "Long-tail" or "Bo'sun-bird." Little has been written of these wonderful creatures, which choose Bermuda as their most northern breeding-place. Occasionally they are seen on American sea-coasts, but then it is probable that they have been blown in by severe storms.

The Yellow-billed Tropic-bird (*Phaëthon americanus* O.-Grant) is the most abundant of the sea-birds of Bermuda, and is the most conspicuous by reason of its colour and its numbers. It is only seen there, however, between February and October; after the latter month it migrates south to the West Indies, where a larger species, the Red-billed Tropic-bird (*P. ætherius*), is also found. Another sea-bird, the Audubon's Shearwater (*Puffinus lherminieri*), occasionally breeds in limited numbers in the same localities with the Tropic-birds, but it is so very rare and so seldom seen that very few people are aware of its existence there at all.

The first glimpse I had of a living Tropic-bird was on the morning we first sighted land *en route* to Bermuda from New York. It was flying along in its characteristic manner, not unlike a white Pigeon, and the purity of its plumage and the long willowy tail-feathers excited the admiration of the passengers. We had experienced a rough sea, and that morning found us all with that peculiar feeling of relief which most of us experience after leaving the horrors of sea-sickness behind. I had escaped it, but one of the passengers afterwards confided to me that it was the most terrible thing he had been through—one moment he thought he would die and the next feared that he would not! Even a small school of whales and the numerous flying-fish, as well

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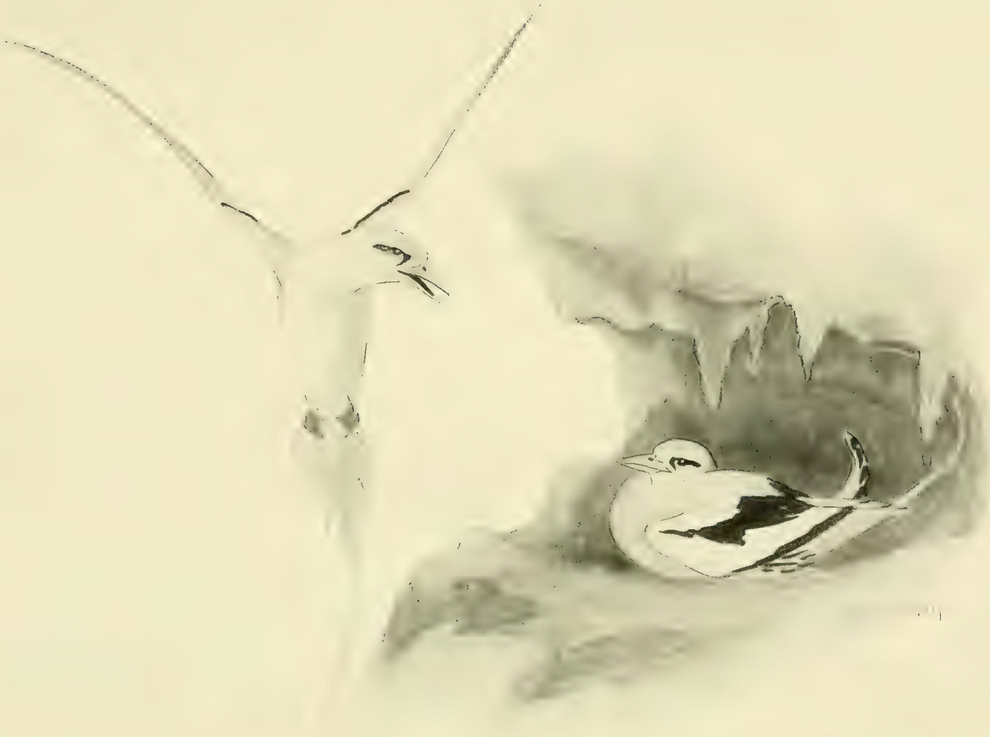
* For explanation of the plates see p. 559.



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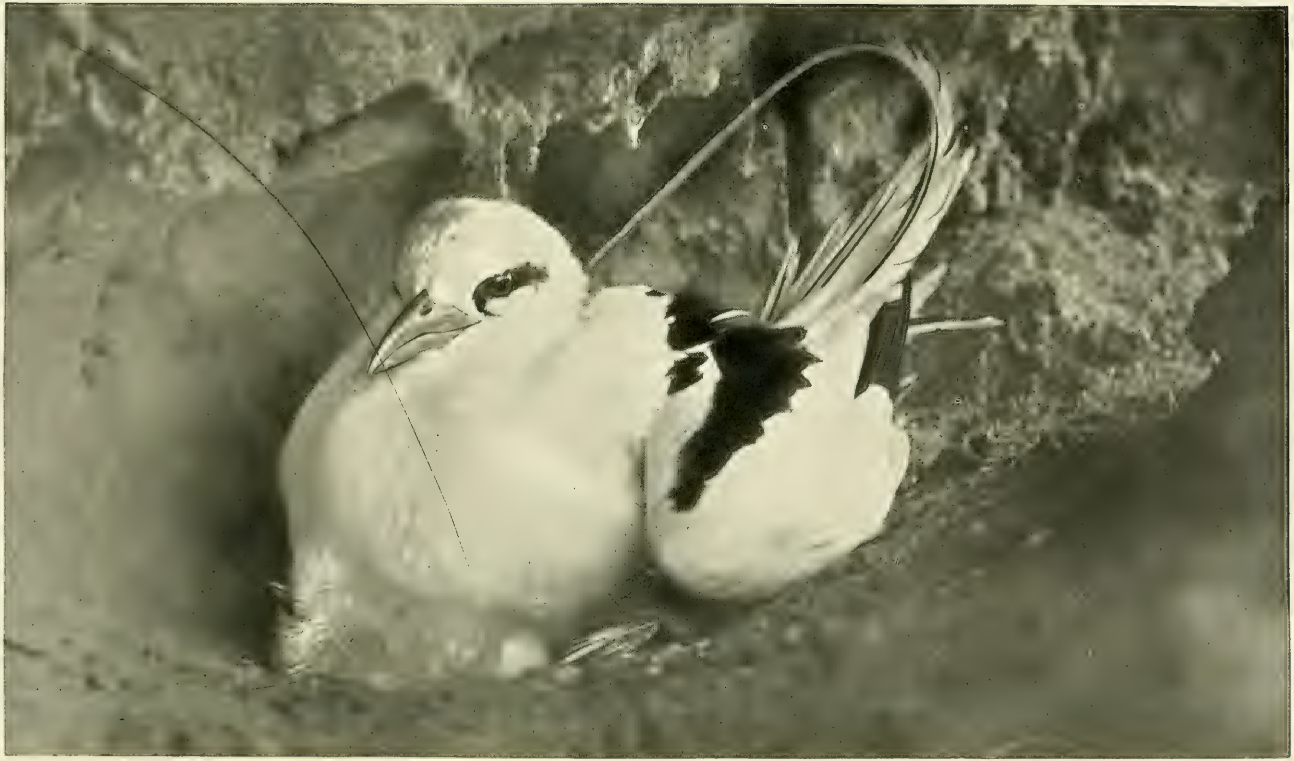
PHAËTHON AMERICANUS.



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PHAËTHON AMERICANUS

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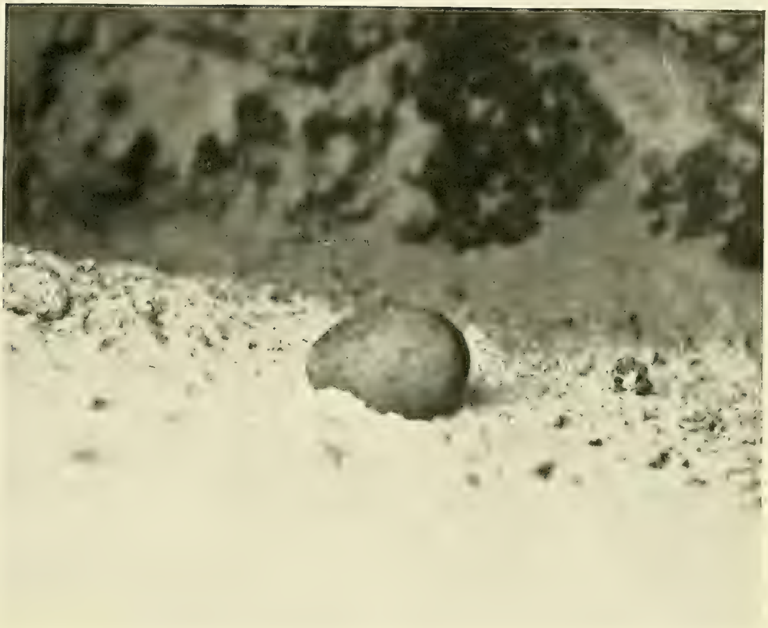

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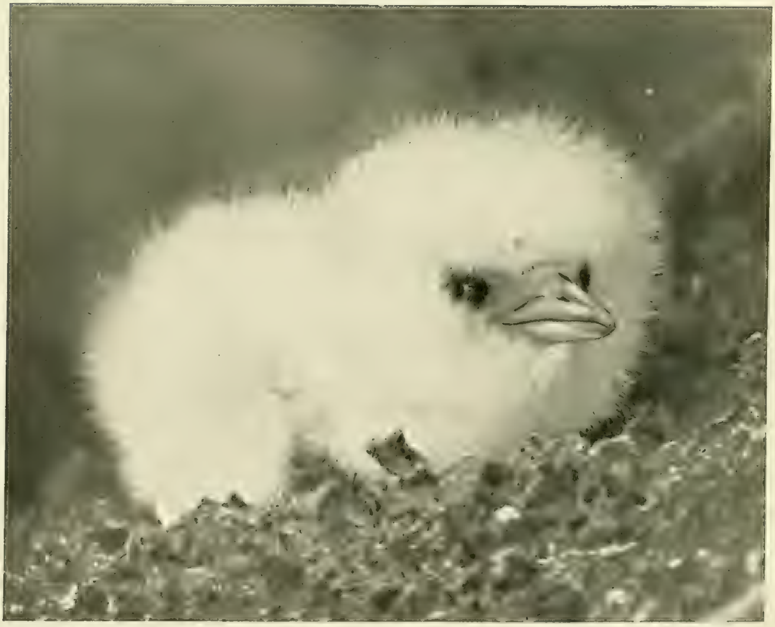


MENPES PRESS, WATFORD.

EGG AND NESTLING OF PHAËTHON AMERICANUS.

as the Storm-Petrels following the boat, failed to dissipate the indifference of the afflicted passengers.

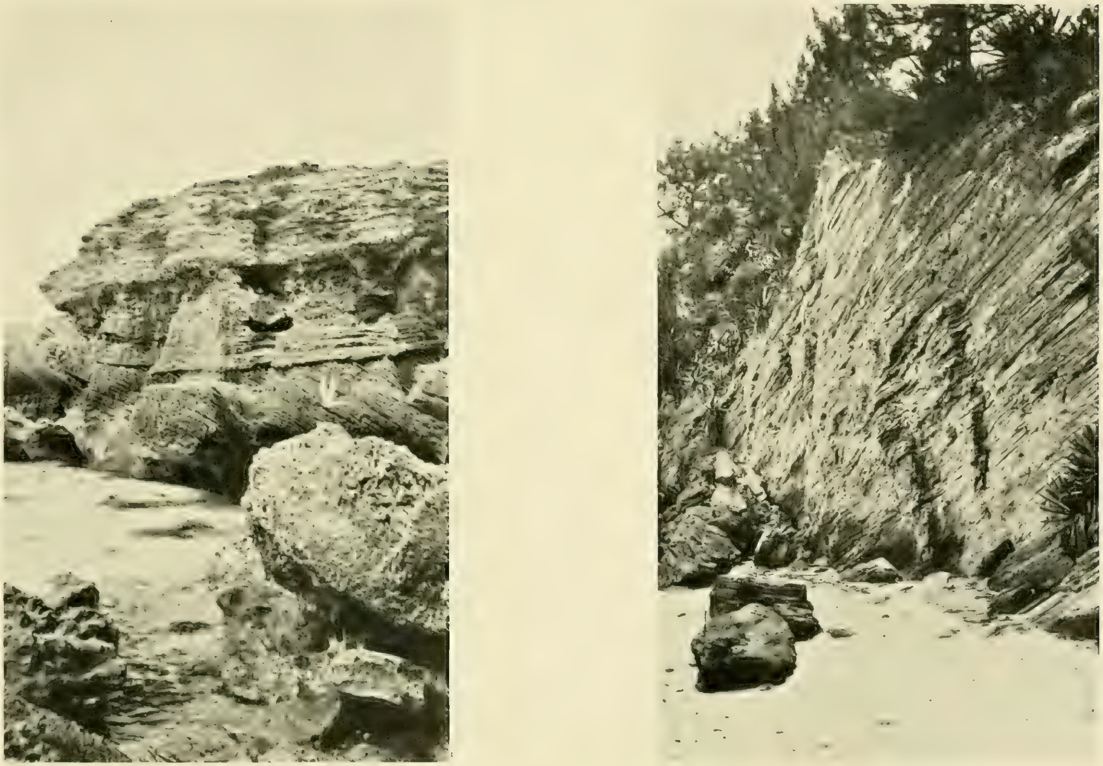
Bermuda is composed of a few large islands and a great many smaller ones, about 150 in total number; the whole group forms a land-area of but nineteen or twenty square miles. It may be roughly compared to a fish-hook in shape—the part forming the hook lying to the south-west and the other end extending diagonally to the north-east.

I made my headquarters at three of the principal towns during my quest of the birds. These were St. George's, Hamilton, and Somerset. St. George's, located at the northern end, is a quaint old town, the population being mostly coloured. It was formerly the capital. Hamilton is the present capital, and has the only practical harbour. It is more modern than the other towns, and is situated near the centre of the group. Somerset is a small place near the south-western end.

It was to Somerset I repaired after tarrying in Hamilton a few days. The shores at Somerset are very rocky and steep. On the morning of my arrival there I saw a flock of ten or twelve Tropic-birds in the air, wheeling in graceful curves and continually uttering their peculiar cries of "tik-et, tik-et . . . tik-tik," a chorus of these sounds in varied pitches similar to the noise made by a creaking pulley. Their long tail-feathers are very flexible, and sometimes, when making a sudden turn or encountering a stiff breeze, they would bend almost at right angles. Against the blue sky the whiteness of their plumage is dazzling, but when the cliffs formed a background their underparts appeared of a beautiful pale green, which was due to the reflection of the bright emerald of the water below them.

They were frequently seen flying over the small islands in Elie's Harbour, which is at the south-west of Somerset Island; so one morning my companion and I rowed over to the group. We passed the curious and beautiful Cathedral Rocks—a peculiar rock-formation worn into its gothic resemblance by erosion of wind and water. On reaching the islands we found that on the harbour side they sloped gently to the water's edge, and were covered with a rank growth of the Bermuda cedar, varied with palmettos, century plants, and the too-abundant prickly pear. On the ocean side they terminated abruptly in steep and almost inaccessible cliffs of rock (Plate XXIV. fig. 2). Tropic-birds were flying all about, occasionally sailing into their holes in the cliffs. There were a number of holes in the sandstone, and in several we could dimly see the birds a few feet back. Finally, a bird on its nest was discovered on a narrow ledge in a miniature cañon. The bird made no attempt to fly, and after photographing it from a distance of six feet, I approached near enough to actually touch it. Even then it made no effort to leave its nest, but repeatedly struck at my offending hand with its open beak, and uttered a harsh, peevish cry. The long tail was bent over, and a long feather in the nest seemed to indicate the fate of the long tail-feathers, for afterwards nearly every nest seen was ornamented with one or two, which had dropped from the bird owing to its cramped position on the nest. I had noticed that the birds flying about seemed to have orange-red bills rather than the yellow to which they owe their name, and this bird certainly had a red bill. I called the attention of my companion to it, and we agreed that it could be best described as bright orange-red, inclining to vermilion on the upper ridge. This statement is not in accord with any descriptions I have read of this species, which describe the bill as pale or orange-yellow. A few of the several hundred of the birds seen (about eight or nine) had yellow bills, but these I judge had not attained their full coloration, though they were breeding.

Graceful as they are in the air, on the ground they are extremely awkward, and seem to have difficulty in making any progress over the rocks. They creep along on their breasts, pushing with their webbed feet, sometimes aided by their wings, and on one occasion I saw one hop or rather bounce along over the soft sargassum weed, which covered the floor of the cave in which it had its nest. I never saw one standing up on its legs as do the Gulls and Terns; they always seemed to be sitting, and no doubt their legs



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NESTING SITES OF PHAËTHON AMERICANUS.

are so absurdly small that they are too weak to hold them up.

The birds being so tame—or, rather, fearless—while on their nests, I had splendid opportunity to observe their coloration. The plumage of head and breast has an exquisite satiny sheen, which loses some of its lustre after the bird is dead. The general colour is snowy-white, varied with jet-black on sides of head and the wings and with dark grey on the flanks. In fully adult birds there is a beautiful tint of delicate salmon-pink, which suffuses the sides of the neck and the long feathers of the tail. The upper sides of the tail- and wing-shafts are black, fading to white at the tips. The feet, the four toes of which are connected by one web, are black, the tarsus being bluish white. In size they may be compared to a large Pigeon, but their extent of wing is much greater, being about 38 inches. If I chanced to visit a nest while the parents were absent, the returning bird would hover in the air above me or else soar about, but would not alight. As soon as I left the vicinity and got into my boat it would sail down, and, after alighting, would creep awkwardly to the nest, turning round several times before finally settling down.

But one egg is laid, which averages 2⅛ inches in length by 1¼ inches in breadth. The colour is light purplish brown, thickly speckled, especially at the larger end, with a darker shade. Both sexes incubate, and, when the birds relieve each other, they would caress one another, meanwhile uttering sounds reminiscent of the "Flicker" (the Golden-winged Woodpecker), "flee-ker—flee-ker," and the relieved bird would depart soon after. The young bird is downy and white, with dark-coloured skin around the bill and eyes (Plate XXIII.).

One would not suspect these elegant creatures of being related to the clumsy Pelicans, but they belong to the same group, and also have a gular pouch, but it is fully feathered and not at all conspicuous. For the first few days the young bird is fed on regurgitated juices and partly-digested food from the pouch of its parents. Later on it is fed on more solid food, such as squids, minnows, flying-fish, &c. Squids appear to be the favourite food, and for this reason the abundant Tropic-bird is not especially popular with the fishermen, who find the squid a most invaluable bait.

After a few weeks the little chick is left much alone, the parents visiting it with food but two or three times a day. The time spent in the nest is about two months, and the young bird is then practically fully feathered.

The old birds would not leave their nests while I was in the vicinity, so I took advantage of this and made several sketches in colour. One bird actually sat for me for a space of three hours while I painted its portrait, life-size, and it proved an excellent model. My presence did not affect it, although the restlessness of the inquisitive little chick, which insisted on poking its head out and watching me, caused the mother to remonstrate with a guttural "kuk-kuk," and tuck the little fellow under her breast or wing.

Another nest was in a fissure of rock, and here I found a newly-hatched bird and its red-billed parent. The old bird had a tail which measured twenty-two inches, which is about four inches above the average, and had a very deep rosy tint on the neck, scapulars, and tail. After removing her from the nest she fluttered down to the water, floating very high with her tail raised almost vertical, and, with much flapping, finally rose in the air and flew gracefully away. I returned to the young bird, and placed it in the open to photograph it. While setting the camera, the little one lost its balance and tumbled down about four feet, landing on the sharp rock. I expected it to be killed, but it was still alive, so I placed it back in the nest. Returning two days later, I found its parents absent, but the youngster was apparently all right, being quite perk and lively. On a subsequent visit, to my surprise, I found a yellow-billed bird with a shorter white tail on the nest, it being probably the other parent of the young one, which seemed none the worse for its accident.

After spending some time among the birds in the harbour, I moved over to St. George's, taking the stage or bus from Hamilton : the distance is twelve miles from Hamilton and the fare a shilling. The ride along the fragrant oleanderbordered road is surely delightful and amusing, for the bus carries anything and everything—passengers, black and white, crates of live fowls, onions, baby-buggies, groceries, &c.—all jumbled in regardless, and the merchandise is delivered along the road.

At St. George's I became acquainted with a gentleman whose son was caretaker of one of the larger islands in Castle Harbour, which lies just beyond St. George's Harbour. It is studded with many islands, on which the "long-tails" are very numerous. After my assuring him that I did not want the birds for millinery purposes, he agreed to speak to his son and arrange for me to go over to the island, where I could study the birds to advantage.

A few days later, during which we had a terrific windstorm, I started for the island. Taking a ferry-boat over to St. David's, I walked across that island, following a narrow footpath, which led past a swampy tract where I saw an American Egret, a rare visitor to Bermuda. On reaching the shore I met the gentleman in his motor-boat, and we started off. Suddenly the power gave out, and after several hours of paddling in the choppy sea, we drew near to the island with its forbidding cliffs. I wondered where we would land, but soon saw a concrete dock with stairs which led to the top of the cliffs. Here we found my friend's wife and family, and a charming little cottage and garden overlooking the sea. There were several of the dainty English Goldfinches flitting about. They are quite abundant in Bermuda, and their cheerful song is very pleasant to hear.

After a refreshing lunch, we started in a row-boat for one of the numerous small islands close by. It was difficult to keep a straight course, and as we drew near to our destination, it became a problem as to how we would land. The huge waves would dash us in with great danger of smashing the boat, and then quickly sweep us out again. We finally decided that I was to throw my sketching materials and camera on to one of the flat rocks above the line of the surf and then jump. I succeeded in the first well enough, but before I had time to jump, another wave came from behind and I was in the water. I made a wild grab for the rocks and drew myself up, but not without many cuts and bruises, for the rocks about Bermuda are the most treacherous I have ever seen. I managed to catch the rope, and pulled the boat in to enable my guide to land, and after fastening it to prevent it from being dashed against the rocks, we started to explore.

A gleam of white under a projecting rock attracted our attention, and investigation proved it to be an old bird and a young one about ten days old. The mother's wing protectively encircled her chick, and on our approach she uttered her peevish cry, which the youngster feebly tried to imitate. However, I proceeded with the photographing, and succeeded in getting a fairly good result in spite of the darkness of the nesting-cavity.

The nests on these islands are placed in quite different locations from those seen in Elie's Harbour. The islands in Castle Harbour are low and comparatively flat, and are composed almost entirely of sharp coral rock. On some of the islands (these are the very small ones and uninhabited) the rocks are covered with a long, coarse grass, and in this were a few nests entirely hidden. Several times the harsh cry of a bird, almost under my feet, prevented my treading on it. Nests were also placed under the decorative Bermuda cedar shrubs, which formed a beautiful background to the bird.

My guide, who had studied the birds for years, gave me much interesting information regarding them. He said that they returned year after year to the same nesting-place; he had placed a wire ring on a bird's foot, and observed that it returned for three successive seasons. They attain their red bills and full plumage in their third year. To determine the time of incubation he procured a freshly-laid egg and placed it in an incubator. It hatched after a period of twenty-eight days.

On another island comparatively bare of vegetation, I found peculiar tunnels in the rock close to the surface—in some places broken through and exposed to the light. Nearly every opening showed a brooding Tropic-bird beneath it. In some of these tunnels I found nests of the Shearwater, about six or seven in total number. My guide quaintly called them the "dusty-sheah-watahs," and seemed to think them vastly more attractive than the lovely Tropic-birds, probably because of their rarity. The few nests found of the Shearwater we supposed to be the only ones in Bermuda, and diligent search on the neighbouring islands failed to reveal any more. The Shearwater is more active at dusk, when its uncanny cries are heard over the outer islands. It is about the same size as the Tropic-bird, but in appearance very different. It has a short tail and a hooked beak, the nostrils placed in a double tube. The plumage is sooty-brown above and white beneath ; the feet are webbed and black and white in colour.

In each of these nests, together with the half-grown young birds, I found a white egg, but these were all cracked and spoiled. They were about the same size as those of the Tropic-bird, but narrower. The young Shearwaters are of a smoky-grey with whitish underparts. They would try to peck me when I touched them, but their strenuous efforts failed to even pinch.

Several years ago a foreign millinery concern offered prices for heads, wings, and tails of Tropic-birds, but they are now protected, and certainly do add to the attractiveness of Bermuda, of which they are so striking a feature.

EXPLANATION OF PLATES.

PLATE XXI. *Phaëthon americanus* brooding on nest, her mate about to relieve her. From a sketch made by the author at Bermuda.

XXII. *Phaëthon americanus.* Photograph of female and young bird on Morgan's Island, Bermuda, May 1913.

XXIII. Fig. 1. *Phaëthon americanus.* Photograph of a young bird about 10 days old. Nonsuch Island, Bermuda, June 1913.

Fig. 2. Egg and nest of *Phaëthon americanus* on Morgan's Island, Bermuda, May 1913.

XXIV. Fig. 1. Nesting site of *Phaëthon americanus* on Nonsuch Island, Bermuda, showing a bird in flight, May 1913.

Fig. 2. Limestone cliffs on Somerset, Bermuda ; the Tropic-birds nest in holes in these cliffs.

XXXV.—*The Spring Migration at Chinwangtao in North-East Chihli.* By J. D. D. La Touche, M.B.O.U.

[The following paper, containing a report on migration in northern China, was prepared by Mr. La Touche for the British Ornithologists' Club, and is a continuation of a previous record of observations in the Island of Shaweishan published in the Bulletin of the Club, vol. xxix. 1912, pp. 124–160. The Committee of the Club, however, consider that long articles such as these are out of place in the Bulletin, and have, therefore, handed over the present report to us for publication in the pages of 'The Ibis.' The report has been revised and arranged by Mr. C. B. Rickett, and to him our best thanks are due for the trouble he has taken in the matter.—Ed.]

Introduction.

Chinwangtao is situated on the north-east coast of Chihli, inside the entrance to the Gulf of Liautung—39° 55′ N. by 119° 38′ E. The Island, or peninsula rather, as it is connected with the mainland by the railway embankment and by a causeway enclosing a large pond much frequented by wildfowl during the migration season, is separated from the dunes of the north-east beach by a narrow tidal creek, which was dug some thirteen years ago to provide an outlet to the small stream which originally had its mouth at the north-west corner of the then peninsula, now blocked by the above mentioned embankment. There is no doubt that Chinwangtao was originally an island, and that when the sea receded, probably not many hundred years ago, it remained a rocky headland, breaking as at present the curve of the bay that extends from the ruins of the Great Wall of China on the shores of Shanhaikuan to the well-known Foreign summer settlement of Peitaiho. The island is about midway between these two localities. The mountains, which run north-east and south-west, are about four or five miles from the sea at Shanhaikuan and some twelve miles at Chinwangtao, the plain gradually widening, until a little beyond the Luan River it merges into the great eastern plain of Chihli.

The climate of Chingwangtao is extremely dry and bracing.

Almost incessant winds prevail during a great part of the year, and at Chinwangtao itself these are very variable, often shifting all round the compass within a very few hours. From the middle or end of December, according to the prevailing temperature, the bay is frozen over, and the ice does not disappear, even in mild seasons, much before the middle of February. The minimum temperature in winter rarely falls below — 7° Fahrenheit, the mean winter temperature being between 18° in cold winters and nearly 26° for mild seasons, while in summer the mean temperature of July and August ranges from 72° to 75°·5, seldom reaching above 90°.

From its somewhat prominent position at the entrance of the Gulf of Liautung, and with only a narrow strip of plain between it and the mountains, Chinwangtao is an excellent place for watching the passage of birds. The island is hardly inhabited, there being altogether but five houses on the cliffs facing the sea, and the cover is just sufficient to induce birds to tarry awhile after landing, and neither high nor thick enough to cause any impediment to the observation of birds on the wing or settled. The autumn migration is the one most easily studied. The birds when bound south appear generally to follow the coast line, and many species may be observed by day, skirting the coast or passing overhead, either over Chinwangtao or not far inland. At that season, wagtails, pipits, larks, swallows, sand-martins, black drongos, rooks, jackdaws, the Oriental carrion crow, swifts, all kinds of Accipitres, cranes, bustards, and innumerable waterfowl may be seen passing by day, sometimes in scattered flocks, and often, as in the case of the smaller Passeres and rooks, in long streams which pass down the coast at no great distance from the sea. The first to appear are curlews and the sea-gulls (*Larus ridibundus*) some time in July; then at the end of July and beginning of August, snipe, waders, and many terns fly past. During August and early in September, the millet fields swarm with reed-warblers (*Acrocephalus bistrigiceps, A. tangorum*, and *A. sorghophilus*), while swallows, sand-martins, wagtails, pipits, drongos, swifts, and other birds pass overhead in numbers. At the port itself on suitable days the cover is full of robins (blue-throats, ruby-throats and blue robins) and of willow- and reed-warblers. Late in August and in September, when the crops are ripening, the fields absolutely swarm with buntings, and quantities of grasshopper-warblers are found. The wildfowl then appear. In October, rooks, jackdaws, larks, cranes, bustards, ducks, and geese pass in numerous flocks, and throughout these months birds of prey of all kinds are abundant.

The spring migration is comparatively less interesting and not so easily followed, as the smaller Passeres do not pass in flocks or streams but suddenly appear in the cover on the island, often to disappear as suddenly. Their descent on Chinwangtao is to a great extent dependent on weather conditions, and a favourable wind or the clearing up of the weather generally drives many species away at once. Thus this spring (1914), which has been unusually dry, was remarkable for the scarcity of warblers, flycatchers, quail, and robins, and these birds must have scattered inland almost immediately on arrival. Although last winter was abnormally mild, I did not notice that birds arrived any earlier than usual. In normal years, the first birds to appear in spring are gulls, rooks, and geese, generally at the end of February. The wildfowl then pass, the geese until the middle of April and the ducks until May. In April small Passeres pass in increasing numbers, and the migration of nearly all the birds, with the exception of the wildfowl, is at its height towards the middle of May. The first small insectivorous Passeres to pass are *Ruticilla aurorea*, *Ianthia cyanura*, and *Accentor montanellus*. The latter also winter here in sheltered places. Larks, buntings, and bramblings are abundant during April and also hoopoes and pipits; wagtails and swallows appear during the latter half of the month. During May there are rushes of flycatchers, swallows, sand-martins, robins, pipits, wagtails, warblers, buntings, rosefinches, and quail. The migration continues well into June, but after the end of May, arrivals rapidly diminish and consist chiefly of *Locustella certhiola*, reed-warblers, and quail (*Coturnix* and *Turnix*). Inland, there is not much bird-life until the beginning of May, but during that month the country simply swarms with birds on favourable days. Although the spring migration may be said to be over after the first week in June, late arrivals continue to straggle in nearly to the end of the month, and the first autumn migrants, curlews and probably other waders, are heard passing at night, during stormy weather, as early as the middle of July. Thus, it may be said that on the China coast the birds are on the move from February to mid-November north of the Yangtse, and later than that in south China, practically without interruption. The notes taken in 1911 and 1912, in my leisure hours (in the morning, at noon, and after 4 p.m.), are not sufficiently full to show all the bird movements of the northern China coast, but, nevertheless, in conjunction with the fuller observations taken by the collectors engaged by the B.O.C. Migration Committee, indicate the importance of Chinwangtao as a post of observation for the study of bird migration, and it is probable that the migratory birds of Manchuria with few exceptions pass the port on their way to their breeding grounds. It would appear that in spring, migrants, wildfowl excepted, strike across the gulf from the north-east promontory of Shantung and reach this place without touching land after they have passed the Miautau Is. and the southernmost point of the Liautung Peninsula. Birds found dead at sea off the port or on the seashore at Chinwangtao, or seen arriving from over the sea, would seem to confirm this supposition, and a look at the map of this part of China will show it to be not improbable. Of course a number of birds reach Manchuria via inland China, and this would explain the almost total absence of notes on many common birds in the following pages. The same remarks will probably apply to Taku, at the mouth of the Peiho, and other places on the north coast.

In autumn, all the Manchurian migrants would appear to pass down the coast as far as this place at least, and they most probably continue following the coast line to Taku and its neighbourhood.

From what I have seen of the wildfowl, they appear to follow the coast or pass over the plain within a short distance of the sea both in spring and in autumn, and I do not remember noticing arrivals ot ducks and geese from across the sea. The lack of notes on these birds taken by the collectors at Shaweishan, 30 miles from the mouth of the Yangtse, would seem to corroborate my local observations that the geese and ducks do not travel far from the coast-line, but keep to the vicinity of the coast or else fly overland.

The Hsieh Chia Ying Marshes mentioned below are situated some 25 miles down the coast. They were visited by the collectors at the end of March, 1913.

The "Marshes" are those about four miles from Chinwangtao, on the way to Shanhaikuan.

The "Port" indicates the actual island of Chinwangtao, about three-quarters of a mile across or less, and its immediate vicinity.

"Inland" refers to the interior from four to eight miles inland of the port.

Except where specially indicated, all figures giving numbers of birds seen, of ten and above, are roughly approximate. It has been impossible to state whether birds seen inland were new arrivals, but it may be taken as almost certain that records taken at the port indicate arrivals of the actual day, as birds as a rule do not tarry here, but go on at once.

WEATHER.

[Mr. La Touche has sent daily reports of the weather at Chinwangtao from the 9th of March to the 15th of June, 1911, 1912, and 1913, from which the following notes have been taken.]

1911.

MARCH. *Ther. Max.* 50° on the 26th. *Min.* 22° on the 3rd and 10th. *Mean* 34°·5. *Rain* 1·60 inches on the 22nd and 26th. *Snow* 1·25 inches on the 11th, 12th, 15th, 21st and 29th. *Wind.* A strong gale from the north-east on the 29th, during the rest of the month varying from calm and light airs to moderate breezes.

April. *Ther. Max.* 71° on the 30th. *Min.* 29° on the 1st. *Mean* 48°. *Rain* 1·57 inches in 42 hours on the 7th, 8th, 12th, 16th and 19th. *Wind.* Fresh gale from the north-east on the 12th, moderate gales on the 13th and 19th from the north-east and on the 25th from the north-north-east. Rest of the month varying from light airs to strong breezes.

May. *Ther. Max.* 80° on the 7th. *Min.* 40° on the 5th and 14th. *Mean* 59°. *Rain* 2·70 inches in $20\frac{1}{4}$ hours on the night of 30th of April/1st of May, and that of the 2nd/3rd of May, and also on the 18th, 25th and 26th. *Wind.* A fresh gale from the north-east was registered on the 17th, and moderate gales from the south-west on the 5th and the north-east on the 15th. Fresh and strong breezes occurred frequently throughout the month.

June. *Rain* fell on the 1st, 2nd, 3rd, 10th and 15th. *Wind* varying from light to fresh breezes with a strong breeze from the north-west on the 4th and from the south-west on the 10th.

1912.

March. *Ther. Max.* 57° on the 20th. *Min.* 19° on the 17th. *Mean* 31°·2. *Rain* a trace. *Snow* 0·02 on the 15th and 16th. *Wind.* Fresh gales from the north-east on the 16th, the north-north-west on the 20th, and the north-north-east on the 27th; during the rest of the month light airs to a strong breeze from the north-east on the 11th.

April. *Ther. Max.* 74° on the 25th. *Min.* 25° on the 5th. *Mean* 48°·3. *Rain* 1·43 inches in 21 hours 25 minutes on the 8th, 18th and 20th. *Wind.* Moderate gales from the north-west on the 14th and north-east on the 25th. Rest of the month calm or light breezes, with a strong breeze from the south-west on the 26th and 27th.

May. *Ther. Max.* 79° on the 27th. *Min.* 44° on the 7th and 8th. *Mean* 58°·3. *Rain* 9·18 inches in 43 hours 25 minutes on the 2nd, 3rd, 10th, 11th, 15th, 17th, 18th and 26th. *Wind* mostly calms and light airs. A moderate gale from the south-west on the 18th.

June. *Rain* fell on the 8th, 10th, 12th, 13th and 14th. *Wind.* A fresh breeze from the north-west on the 8th, light breezes during the rest of the time.

1913.

March. *Ther. Max.* 64° on the 28th. *Min.* 10° on the 7th. *Mean* 33°·36. *Rain* nil. *Snow* 0·54 on the 24th and 30th. *Wind.* A moderate gale from the north on the 24th; light airs and moderate breezes during the rest of the month except on the 14th and 30th, when strong breezes from the south-west and south respectively were registered.

April. *Ther. Max.* 73° on the 27th. *Min.* 28° on the 9th. *Mean* 48°·78. *Rain* 1·14 inches in 37 hours 55 minutes on the 11th, 19th, 22nd, 24th and 30th. *Wind.* Strong breezes were recorded on the 10th from the south, on the 19th from the south-west, and on the 30th from the east. Light airs to fresh breezes during the rest of the month.

May. *Ther. Max.* 81° on the 27th. *Min.* 41° on the 2nd. *Mean* 60°·44. *Rain* 1·79 inches in 28 hours 50 minutes on the 12th, 14th and 25th. *Wind.* Light airs and moderate breezes except on the 4th and 10th, when strong breezes blew from the south-west, and on the 21st and 27th, when winds of similar force blew from the south and west.

June. *Rain* fell on the 4th, 6th, 8th, 9th, 11th and 15th. *Wind.* A typhoon occurred on the night of the 8th/9th, blowing when at its height at a force of 11. For the rest of the fortnight covered by these notes nothing over a moderate breeze on the 10th was recorded.

1. Corvus orientalis Eversmann.
   1912. Beginning Feb. (2). Feb. 17 (5).
   1913. March 20 (many passing).

2. Corvus levaillanti L.
   1911. May 28 (1).
   1912. June 2 (1 or 2).

3. Corvus pastinator Gould.

1911. Feb. 28 (a party). March 11, 12, 31 (a few each day). April 2 (building), 9 (passing), 23 (building and sitting).

1912. Feb. 20 (6). March 3 (many), 6 (passing), 9 (many), 18, 24 (passing). April 30 (a party passing). May 3 (passing).

1913. Feb. 27 (a flock), 28 (a flock). March 2 (thousands reported passing), 5 (a flock from south to north), 11 (50), 14 (many), 16 (20), 18 (10), 22 (30), 26 (passing). April 16 (10 going west), 23 (finishing nests and sitting), 27 (a party arriving from over the sea).

4. Corvus dauricus Pall.

1911. Feb. 28 (seen at the port). March 26 (a flock mixed with *C. neglectus*).

1913. March 2 (thousands reported passing), 3 (3 or 4 from sea going north), 14 (many), 16 (many), 19 (great many), 26 and 29 (seen at Hsieh Chia Ying).

5. Corvus neglectus (Schlegel).

1911. March 26 (a large flock). April 2 (seen).

1913. March 14 (many), 16 (many), 19 (great many). May 1 (two flocks, about 180 individuals, going west), 25 (a party of 10).

6. Parus insularis Hellmayr.

1912. April 21 (one shot near the sea).

7. Remiza consobrina (Swinhoe).

1913. May 13 (1).

8. Buchanga atra (Hermann).

1911. May 21 (1), 28 (1). June 11 (1).

1912. June 6 (1).

1913. May 20 (1), 31 (2). June 3 (2).

9. Anorthura fumigata (Temm.).

1911. March 26 (1). April 10 (1).

10. Locustella certhiola (Pall.).

1911. May 28 (many inland). June 3 (seen), 6 and 7 (many), 8 (2), 11 (3), 14 (2).

1912. June 8 (a few).

1913. May 30 (1), 31 (2 in the market at Shanhaikuan). June 2 (1), 4 (2 or 3), 5 (3 or 4), 6 (many), 7 (a few), 11 (many).

11. LOCUSTELLA LANCEOLATA (Temm.).

1911. May 28 (many).
1912. May 15 (many).
1913. May 19 (1), 20 (seen), 21 (1), 22 (2), 23, 25, 30, 31 (seen). June 4 (2 or 3), 5 (seen).

12. ACROCEPHALUS ORIENTALIS (T. & S.).

1912. May 15 (many).
1913. May 18 (a few). June 4 (1).

13. ACROCEPHALUS BISTRIGICEPS (Swinhoe).

1911. May 21 (several), 28 (many). June 7 (many), 8 (5), 11 (1), 14 (1).
1912. May 15 (many), 28 (5), 29 (seen), 31 (few). June 7 (several), 8 (a few).
1913. May 17 (several), 20 (several), 23 and 25 (seen), 27 (2), 29 (1), 30 and 31 (seen). June 2 (3), 4, 5 and 6 (seen), 7 (many), 10 (1), 11 (great many), 12 (a few).

14. ACROCEPHALUS TANGORUM La Touche.

1913. May 30 (2). June 2 (2).

15. ACROCEPHALUS SORGOPHILUS (Swinhoe).

1911. June 7 (1).
1913. May 30 (1). June 6 (several), 7 (many), 10 (1).

16. ARUNDINAX AËDON (Pall.).

1912. May 15 (seen), 28 and 29 (seen), 31 (2). June 2 (1).
1913. May 18 (a few), 22 (2), 23 (seen), 24 (1), 29 (1), 30 (several), 31 (1). June 2 (1), 5 (1).

17. HERBIVOCULA SCHWARZI (Radde).

1913. May 16 (4), 17 (1), 26 (2). June 4 (1).

18. HERBIVOCULA FUSCATA (Blyth).

1911. April 21 (4).
1912. April 30 (1). May 13 and 28 (seen).
1913. April 27 (1), 28 (4). May 1 (2), 5 (3), 14 (2), 16 (many), 17 (2), 19 (2), 20 (seen), 21 (many), 22 and 23 (seen), 24 (1), 30 (1).

19. PHYLLOSCOPUS PLUMBEITARSUS Swinhoe.

1912. May 28 (seen).
1913. May 16 (3). June 6 (several), 7 (many).

20. Phylloscopus borealis (Blasius).
1911. May 25 (a few), 28 (seen).
1912. May 15 (many), 26 (2 or 3), 28 and 31 (seen). June 2 (seen).
1913. May 23 and 25 (seen), 29 (10), 30 (several), 31 (seen). June 1 (2), 2 (3), 3 (3), 7 (many), 10 (4 or 5), 11 (several).

21. Phylloscopus coronatus (T. & S.).
1913. May 16 (3).

22. Phylloscopus superciliosus (Gm.).
1911. April 25 (2), 30 (seen). May 7 (great many), 9 (many).
1912. April 30 (many). May 4, 6, 7, and 11 (many), 12 (a few).
1913. April 11 (1), 24 (1), 26 (2), 27 (3), 29 (many), 30 (seen). May 1 (many), 2 (seen), 3 (seen), 4 (a great many), 5, 7, and 8 (seen), 16 (many), 17, 20, and 23 (seen), 25 (5).

23. Phylloscopus proregulus (Pall.).
1911. April 14 (2), 18 (several), 19 and 20 (many), 21 (several), 23 (seen). May 7 (a great many).
1912. April 7 (1), 22 (2), 30 (many).
1913. April 8 (2), 9 (2), 11 (3), 16 (2), 24 (1), 26 (1), 27 (10), 28 (2), 29 (seen), 30 (3). May 1 and 2 (seen), 8 (2), 16 (many), 17 (seen).

24. Lusciniola sinensis Witherby.
1911. April 14 (2), 16 (1).
1913. April 24 (1).

25. Lanius sphenocercus Cabanis.
1911. March 26 (1).
1913. March 27 (1).

26. Lanius bucephalus (T. & S.).
1913. April. Reported passing at Shanhaikuan, not seen at Chinwangtao.

27. Lanius superciliosus Lath.
1911. May 16 (several), 25 (1).
1912. May 15 (several).
1913. May 11 (4), 14 (3), 15 (1), 16 (5), 17 (seen), 18 (5), 20 (many), 23 (many), 26 (1), 27 (1), 30 (several). June 2 (1).

28. Lanius lucionensis L.
1913. June 7 (1).

29. Pericrocotus cinereus Lafr.
1911. May 14 (2), 21 (2).
1912. June 2 (1).
1913. May 13 (7), 20 (seen).

30. Oriolus indicus Jerdon.
1911. May 21 (heard inland), 28 (seen inland).
1912. May 15 (1 at port). June 2 (seen inland).
1913. May 20, 25, and 31 (two seen each day inland).

31. Spodiopsar cineraceus (Temm.).
1911. April 2 (a small party), 11 (3 at port, large flock inland). May 21 (2 inland).
1912. April 2 (1), 14 (1).
1913. March 30 (3). April 8 (10), 9 (20), 10 (20), 11 (30), 17 (10). May 20 (1).

32. Sturnia sturnina (Pall.).
1913. May 16 (2), 18 (1 found dead), 20 (5), 25 (2), 26 (2).

33. Alseonax latirostris (Raffles).
1911. May 28 (seen).
1912. May 8 (1), 13 (seen).
1913. May 11 (1), 16 (4), 20 (2), 23 (seen).

34. Hemichelidon sibirica (Gm.).
1911. May 28 (1).
1913. May 16 (1), 23 (5), 25 (2), 31 (2). June 2 (2), 3 (3), 4 (seen), 10 (1).

35. Poliomyias luteola (Pall.).
1913. May 20 (3), 23 (1).

36. Siphia albicilla (Pall.).
1911. May 14 (1), 15 (1), 28 (several).
1912. May 13 (1), 22 (1), 28 (seen).
1913. May 6 (1), 10 (1), 11 (many), 13 (11), 14 (1), 16 (several), 19 (1), 20 (seen), 21 (1), 30 (1). June 5 (1).

37. Xanthopygia tricolor Blyth.
1912. May 11 (1).
1913. May 13 (1), 16 (2), 20 (1).

38. Terpsiphone incii (Gould).
1912. May 30 (1). June 2 (1).
1913. May 20 (3), 23 (2). June 3 (1), 4 (2), 5 (2), 7 (about a dozen all red, except one, seen at port), 10 (3).

39. Saxicola morio Ehr.
1913. April 27 (1).

40. Pratincola maura (Pall.).
1911. April 20 (1), 21 (1), 24 (5), 25 (several), 28 (1), 29 (seen). May 1 (1), 8 (seen), 9 (many).
1912. April 17 (several), 22 (several), 30 (1). May 7 (many), 12 (2), 28 (2).
1913. April 11 (12), 12 (3), 14 (1), 16 (4), 24 (1), 25 (2), 26 (1), 27 (10), 28 (1), 30 (many). May 1 (seen), 2 (many), 4, 5, 6, 7, 8, 9, and 10 (seen), 14 (many), 15 to 20 and 31 (seen).

41. Ruticilla aurorea (Pall.).
1911. March 21 (1), 22 to 24 (1), 26 (2). April 4 (1).
1912. April 1 (1).
1913. March 9 (1), 29 (1), 31 (1). April 19 (1).

42. Cyanecula cœrulecula (Pall.).
1911. May 15 (1), 16 (1).
1912. May 13 (1).
1913. May 9 (4), 11 (2), 14 (6), 16 (a few), 17 (a few), 18 (seen), 19 (1), 20 and 22 (seen), 23 (2), 24 (4).

43. Calliope camschatkensis (Gm.).
1913. May 18 (1).

44. Larvivora cyane (Pall.).
1911. May 21 (1), 28 (1).
1912. May 15 (seen).
1913. May 9 (1), 11 (1), 16 (4), 17 (several), 18 (2), 23 (3), 29 (1 ♀, those previously seen were all ♂'s), 30 (6).

45. Ianthia cyanura (Pall.).
1911. April 10 (several adult males), 11 (1), 14 (seen), 18 (1), 19 (many), 21 (several), 30 (1).
1912. April 10 (1), 11 (1), 17 (1), 21 (1).
1913. April 4 (1), 5 (1), 10 (1), 11 (7), 12 (1), 14 (5), 16 (3), 21 (2), 24 (1), 25 (2), 26 (1). May 1 (seen), 13 (1).

46. Merula obscura (Gm.).
1912. June 2 (1).
1913. May 3 (1), 16 (2), 18 (1), 20 (2).

47. Merula hortulorum Sclater.
1911. April 29 (2). May 1 (1).

48. Merula naumanni (Temm.).
1911. March 23 (4). April 3 (a few), 4 (4).
1913. April 1 (1), 4 (1), 5 (3), 8 (4), 9 (2), 11 (3).

49. Merula fuscata (Pall.).
1911. April 19 (1), 20 (2), 21 (1), 24 (seen).
1912. April 10 (2), 21 (1), 30 (6). May 8 (2).
1913. March 8 (1). April 4 (1), 7 (3), 9 (1), 11 (10), 17 (2), 18 (1), 19 (3), 22 (1), 23 (4), 27 (1), 29 (3), 30 (2). May 1 (5), 2 (3), 5 (2), 6 (4), 8 (4), 18 (2), 23 (1).

50. Geocichla sibirica (Pall.).
1912. May 28 (1).
1913. May 23 (1), 25 (1).

51. Petrophila manila (Bp.).
1911. May 6 (2 or 3), 21 (1 inland, probably breeding).
1912. May 13 (1), 15 (several).
1913. May 4 (3), 5 (2), 14 (1).

52. Petrophila gularis (Swinhoe).
1911. May 28 (3).
1913. May 20 (1).

53. Carpodacus roseus (Pall.).
1911. March 4 (a few).

54. Carpodacus erythrinus (Pall.).
1913. May 16 (1), 20 (many), 22 (seen), 25 (10).

55. Fringilla montifringilla (L.).
1911. April 9 (1), 10 (several), 11 (seen), 12 (many), 16 (a flock), 18 (a flock), 20 (2), 21 (several), 23 (a few), 24 (10).
1912. April 17 (a flock).
1913. March 31 (2). April 14 (1), 17 (10), 23 (1).

56. Coccothraustes japonicus (T. & S.).
1911. April 23 (two apparently mated).

57. Calcarius lapponicus (L.).
1911. Feb. 1 (large flocks).
1913. March 9 (many), 13 (seen), 15 (10).

58. Plectrophenax nivalis (L.).
1913. Feb. 23 (one shot at the port on the beach at the foot of the cliffs).

59. Emberiza passerina (Pall.).
1911. March 4 (many), 5 (a few), 12 (many), 22 (many), 23 (seen). April 4 (seen), 16 (1).
1912. March 25 (1). May 3 (1).
1913. Feb. 23 (11). March 13 (2), 15 (20), 16 (20), 17 (5), 18 (10), 19 (7), 20 (10), 21 (5), 27 (3). April 8 (1), 12 (2), 17 (4), 26 (1). May 3 (5), 4 (1), 15 (several).

60. Emberiza continentalis Witherby.

1911. March 26 (1). April 13 (1), 14 (several), 18 (1), 21 (1) May 5 (1), 19 (1).
1912. May 7 (1).
1913. March 9 (1), 13 (7), 14 (3), 28 (1). April 11 (1), 25 (2). May 7 (1).

61. Emberiza pyrrhulina Swinhoe.

1911. March 26 (2). April 14 (several), 16 (2).
1913. March 20 (seen), 28 (1).

62. Emberiza fucata Pall.

1911. May 20 (1), 22 (1).
1913. April 24 (1), 27 (1). May 3 and 6 (seen), 11 (8), 14 (1), 18 (seen), 19 (1), 22, 23, and 27 (seen). June 2 (1), 5 (2).

63. Emberiza pusilla Pall.

1911. April 22 (1), 23 (a few), 25 (2). May 7 (a great many), 8 (many), 13 (a few), 21 (seen).
1912. April 21 (1). May 11 (1).
1913. April 11 (1), 18 (1), 23 (1), 25 (3), 27 (3), 28 (many), 29 and 30 (many). May 1 (many), 2 (seen), 3 (many), 4 (a great many), 5 (many), 6 (a great many), 7 (seen), 8, 9, and 10 (many), 11 (a great many), 13, 14, and 16 (many), 18 (a great many), 19 (seen), 20 (many), 23 (seen).

64. Emberiza spodocephala Pall.

1911. April 21 (several), 25 (many). May 6 (many), 7 (a great many), 21 (seen), 29 (many).
1912. April 30 (many). May 5 (seen), 15 (many).
1913. April 11 (1), 17 (1), 18 (1), 19 (1), 21 (3), 24 (2), 26 (1), 27 (3), 28 (1), 30 (2). May 2 (1), 3 (many), 5, 6, 7, 9, 10, 11, 13, 14, and 15 (seen), 16 (many), 18 and 19 (seen), 20 (many), 23 (seen). June 1 (1).

65. Emberiza rustica Pall.

1911. Feb. 28 (many). March 4 (a few), 12 (many).
1913. March 9, 10, and 11 (many), 16 (10), 18 (5).

66. Emberiza elegans Temm.

1911. March 25 (1). April 9 (1), 10 (1).
1912. March 19 (2).
1913. March 28 (1). April 8 (2), 10 (1), 11 (4), 14 (seen).

67. Emberiza chrysophrys Pall.

1911. May 7 (a great many), 21 (seen).
1913. May 4 (7), 9 (1).

68. EMBERIZA TRISTRAMI Swinhoe.
1911. April 30 (1).
1912. May 11 (1), 30 (several).
1913. May 11 (10). June 1 (1).

69. EMBERIZA AUREOLA Pall.
1911. May 15 (several), 21 (a great many), 25 (1), 28 (several), 29 (many).
1912. April 30 (many). May 6 (many), 15 (many). June 6 (several).
1913. May 6 (1), 8 (1), 10 (1), 11 (a great many), 13 (seen), 20 (many), 24 (1), 25 (1), 26 (many), 27 (seen), 28 (seen), 29 (2), 30 (several). June 13 (2).

70. EMBERIZA RUTILA Pall.
1911. May 21 (many).
1913. May 20 (1).

71. COTILE RIPARIA (L.).
1911. May 21 (1).
1912. June 2 (many, probably breeding in the vicinity).
1913. May 17 (many passing the port), 19 (many passing), 20 (seen).

72. CHELIDON LAGOPODA (Pall.).
1913. May 18 (1).

73. HIRUNDO GUTTURALIS Scop.
1911. April 17 (2), 18 (seen), 23 (building).
1912. April 24 (1), 30 (1). May 3 (several). June 2 (many, probably summer visitants).
1913. April 10 (2), 12 (1), 14 (2), 16 (5), 21 (2), 26 (many). May 1, 3, 9, and 13 (seen), 14 and 15 (many), 16 (seen), 17 and 18 (many), 19 (very many), 20 (seen).

74. HIRUNDO ERYTHROGASTRA Bodd.
1912. May 30 (1).
1913. April 16 (1), 20 (7), 26 (1), 27 (2). May 1 (seen), 5 (2), 8 (seen), 9 (1), 15 (seen), 18 (a few), 19 and 20 (seen).

75. HIRUNDO NIPALENSIS Hodgson.
1911. April 20 (3), 23 (seen).
1912. April 24 (1). May 5 (preparing to nest). June 2 (many, probably breeding in the vicinity).
1913. April 14 (3). 21 and 23 (many), 30 (1). May 2 (building), 3, 9, and 13 (seen), 14, 16 to 19 (many), 20 (seen).

76. Motacilla leucopsis Gould.
1913. April 21 (1).

77. Motacilla ocularis Swinhoe.
1911. April 25 (a small party).
1913. April 27 (20). May 11 (several).

78. Motacilla melanope Pall.
1911. May 21 (one seen inland).

[Note.—Records relating to *Motacilla flava, borealis,* and *taivana* were not kept separate and are therefore omitted.]

79. Limonidromus indicus (Gm.).
1913. May 12 (1), 20 (5).

80. Anthus maculatus (Hodgson).
1911. April 30 (a few). May 7 (great many).
1912. May 11 (1).
1913. April 29 (many). May 1 (seen), 2 (3), 4 (many), 6 and 8 (seen), 11 (many), 13 and 16 (seen).

81. Anthus gustavi Swinhoe.
1913. May 20 (2), 25 (1).

82. Anthus cervinus Pall.
1911. May 14 (one large flock).
1912. May 15 (seen).

83. Anthus japonicus T. & S.
1911. April 23 (a flock). May 5 (1 or 2), 7 and 8 (several).
1912. May 6 (seen).
1913. April 14 (20), 20 (1), 27 (many), 28 (10), 29 (seen), 30 (many). May 1 and 2 (seen), 3 (many), 5, 6, 8, and 10 (seen).

84. Anthus richardi Vieill.
1911. May 7 (several), 8 (many).
1912. May 15 (seen).
1913. May 5 (1), 6 (3), 8 (3), 10 (3), 11 (10), 16 (seen).

85. Alaudula cheleensis Swinhoe.
1911. Feb. 12 (one frozen on the breakwater), 19 (many). April 14 (seen), 20 (several). May 5 (nesting).
1912. May 14 (seen).
1913. April 6 (20), 12 (seen), 16 (3), 19 (seen), 23 (5), 25 (seen). May 2 and 14 (seen).

86. Calandrella brachydactyla (Leisl.).
1913. April 19 (three flocks 300–400 in all), 27 (a flock of about 100).

87. Alauda arvensis L.

1911. March 12 (several), 19 (seen), 22 (many), 23 (seen), 24 (a few) 26 (large flocks), 31 (a few). April 9 (a flock).

1912. March 24 and April 1 (seen).

1913. March 9, 11, and 13 (many), 14 (10), 15 (50), 16, 18, 19, and 20 (many), 21 (30), 27 (seen at Hsieh Chia Ying). April 4 (3), 6 (20), 10 (5), 12 (seen), 13 (a few), 19 (seen).

88. Hypopicus poliopsis Swinhoe.

1913. May 11 (2), 20 and 22 (2).

89. Iynx torquilla L.

1912. May 11 (1), 15 (2).

1913. April 24 (1), 26 (1). May 8 (2), 14 (1), 16 (1), 20 (2 inland and 1 at port).

90. Alcedo bengalensis Gm.

1911. May 21 (2).

1913. May 11 (2).

91. Upupa epops L.

1911. March 22 (1), 26 (10), 27 (seen). April 2 (2), 3 (a few), 4 (seen), 10 (several), 12 (several), 18 (seen), 21 (several).

1912. March 11 (1), 24 (1), 25 (1), 28 (several), 30 (2 or 3), 31 (2). April 1 (seen), 2 (4 or 5), 5 (seen), 8 (seen), 9 (1), 13 (1), 20 (seen), 30 (2). May 4 (1), 5 (1), 13 (1).

1913. March 27 (1 at the port) (7 at Hsieh Chia Ying), 28 (2 at Hsieh Chia Ying), 30 (3), 31 (6). April 1 (10), 2 (1), 4 (1), 6 (1), 11 (8), 12 (4), 14 (4), 15 (seen), 16 (4), 17 (8), 18 (5), 19 (8), 20 (2), 21 (3), 25 (1), 27 (1), 29 (1). May 1 (1), 2 (1), 3 (2), 19 (1), 31 (3).

92. Cypselus pekinensis Swinhoe.

1911. May 7 (breeding at Shanhaikuan), 12 (a flock).

1913. May 31 (breeding at Shanhaikuan).

93. Cypselus pacificus Lath.

1911. June 4 (large flock), 8 (a flock), 9 (a large flock), 10 (a large party from east to west), 15 (a flock, apparently only evening visitors from an adjacent breeding haunt).

1912. June 5 (a flock), 9 (seen), 10 to 12 (seen).

1913. April 14 (2). May 9 (2), 17 (2), 19 (a few), 26 (a few). June 4 (a flock to north), 6 (some about), 7 (seen), 14 (a flock), 15 (a large flock).

Birds seen after the 5th of June were probably residents visiting the port.

94. Caprimulgus jotaka T. & S.
1912. June 3 (1).
1913. May 14 (1), 18 (1), 20 (3). June 4 (1), 10 (1).

95. Cuculus canorus L.
1911. May 21 (1), 28 (1).
1912. June 2 (several).
1913. May 11 (1), 16 (1), 20 (3), 23 (2), 25 (2).

96. Asio otus L.
1911. March 24 (1), 26 (1), 27 (2). April 6 (1), 12 (many, some of these were possibly *A. brachyotus*), 13 (2).
1912. April 1 (1), 5 (1), 21 (1).
1913. March 19 (2), 25 (1), 27 (1). April 24 (1).

97. Ninox japonica T. & S.
1913. May 16 (1).

98. Butastur indicus (Gm.).
1913. May 1 (2), 7 (1).

99. Milvus melanotis T. & S.
1911. March 26 (1). April 2 (2). June 11 (1).
1912. March 17 (1). May 3 (2), 6 (1), 15 (2). June 15 (1).
1913. Feb. 23 (1). March 9 (2). April 7 (2), 9 (2), 10 (2), 16 (2), 19 (2), 21 (1). May 7 (5).

Those seen in June were probably summer visitants.

100. Circus cyaneus (L.).
1911. April 19 (1).
1913. April 11 (1), 27 (1).

101. Circus melanoleucus (Forster).
1911. April 14 (several).
1913. April 11 (seen). May 11 (1).

102. Circus sp.
1911. April 18 (several), 16 and 19 (several).
1912. April 10 (1).
1913. March 25 (1). April 6 (1), 14 (1), 16 (1), 23 (1). May 1 (2), 7 (3), 9 (1), 17 (1).

103. Buteo hemilasius T. & S.
1913. March 26 (1), 29 (1). April 13 (1), 14 (1).

104. Buteo plumipes (Hodgson).
1913. May 16 (1), 20 (1).

105. ACCIPITER NISUS (L.).
1911. April 30 (1).
1913. May 1 (1).

106. ASTUR PALUMBARIUS (L.).
1913. March 21 (a freshly shot example in the market).

107. FALCO SACER Gm.
1913. March 9 (1).

108. FALCO PEREGRINUS L,
1911. June 12 (1).
1913. April 19 (1). May 7 (1).

109. FALCO SUBBUTEO L.
1913. May 14 (2), 16 (1), 18 (2), 19 (1), 20 (2).

110. AESALON REGULUS (Pall.).
1911. April 14 (1).
1913. March 16 (1), 20 (1). April 12 (1), 20 (1), 21 (1).

111. ERYTHROPUS AMURENSIS (Radde).
1911. May 5 (2), 6 (1), 7 (1), 14 (2), 21 (several seen inland, some breeding), 24 (several).
1912. April 21 (several).
1913. April 29 (3). May 1 (4), 4 (seen), 11 (10), 13 (5), 16 (seen), 20 (seen), 25 (2).

112. CERCHNEIS JAPONICUS (T. & S.).
1911. April 2 (1).
1913. March 21 (1). April 6 (1), 23 (seen).

113. TURTUR ORIENTALIS Lath.
1911. April 10 (1), 12 (2), 13 (1), 20 (1), 22 (1), 24 (1), 25 (1), 30 (2). May 25 (1).
1912. April 21 (2), 30 (7). May 13 and 15 (several). June 7 (1).
1913. March 27 (1). April 8 (1), 11 (10), 12 (1), 27 (2), 29 (1). May 2 (2), 4 (4), 5 (2), 6 (2), 7 (3), 17 (4), 18 (2), 20 (seen), 27 (2), 30 (1). June 1 (1), 6 (7), 11 (2).

114. COTURNIX COMMUNIS vel JAPONICA.
1911. Feb. 26 (1). March 4 (3), 12 (1), 19 (1). April 9 (2), 10 (2), 11 (2 or 3), 21 (1). May 15 (1).
1912. May 11 (1), 13 (1), 15 (many), 28 (several).
1913. April 23 (1). May 19 (1), 20 (1), 22 (1). June 5 (1), 11 (a few).

115. COTURNIX COMMUNIS Bonn.
1913. March 15 (1). April 18 (1).

Probably most of the *early* records under the preceding heading related to this species.

116. COTURNIX JAPONICA Cassin.
1911. May 16 (2), 25 (2).
1912. May 15 (a great many).
1913. May 17 (a great many, at least 100, of these 21 shot were all of this species), 26 (1), 30 (4).

Probably most of the *late* records under heading of *C. communis* vel *japonica* related to this species.

117. TURNIX BLANFORDI Blyth.
1911. May 25 (1). June 8 (2).
1912. May 11 (1), 15 (a great many), 28 (1).
1913. May 31 (1). June 2 (1), 5 (5), 6 (2), 7 (1).

118. PORZANA PUSILLA Pall.
1911. May 28 (1).
1913. May 20 (2). June 11 (1).

119. GALLICREX CINEREA (Gm.).
1913. April (one shot at Shanhaikuan).

120. FULICA ATRA L.
1913. (One seen by collectors, date not noted.)

121. GRUS sp.
1912. March 31 (2 flocks). April 6 (12).
1913. March 15 (3), 27 (2/3000), 28 (many), 29 (50), 30 (30), 31 (many). April 1 (many).

122. OTIS DYBOWSKII Tacz.
1911. March 11 (1 flock). April 12 (3 flocks), 13 (1 flock), 14 (many), 16 (10 in the fields, and a large flock passing), 19 (2 flocks), 20 (2 flocks), 23 (5). May 7 (5).
1912. April 3 (1 flock), 21 (1).
1913. March 16 (2), 18 (30), 19 (13), 26 (2), 27 (8), 28 (30), 29 (20), 31 (10). April 5 (1 flock), 8 (5), 12 (16), 13 (4), 14 (6), 17 (3), 20 (14), 26 (3), 27 (1), 29 (1).

123. GLAREOLA ORIENTALIS Leach.
1911. April 16 (1). May 5 (a flock).
1913. April 25 (4). May 1 (1 flock).

124. Microsarcops cinereus (Blyth).
1911. March 26 (2).
1913. April 1 (6), 12 (2).

125. Vanellus cristatus Wolf & Meyer.
1911. March 19 (a good many). April 2 (a few).
1912. March 10 (seen). April 5 (4), 21 (a flock).
1913. March 26 to 29 and 31 (many at Hsieh Chia Ying). April 1 (many at same place), 6 (seen), 10 (100), 13 (large flock), 14 (8), 16 (20), 23 (6).

126. Squatarola helvetica (L.).
1913. March 15 (8), 16 (5). April 20 (3), 23 (10). May 8 (5), 24 (10).

127. Ægialitis veredus (Gould).
1911. April 14 (a flock).

128. Ægialitis geoffroyi (Wagler).
1913. May 22 (1).

129. Ægialitis mongolicus (Pall.).
1913. May 16 (5).

130. Ægialitis placidus (Gray).
1911. May 28 (2 inland, apparently paired).

131. Ægialitis minor (Wolf & Meyer).
1911. April 16 (several). May 5 (a few), 6 (2), 25 (1).
1912. April 21 (a few).
1913. April 11 (1), 25 (seen). May 1 and 24 (seen).

132. Ægialitis cantianus (Lath.).
1913. April 12 (7), 15, 16, and 19 (seen), 20 (20), 23 (many), 25, 28, and 29 (seen).

133. Hæmatopus osculans Swinhoe.
1911. May 20 (1).
1913. May 24 (2).

134. Himantopus candidus Bonn.
1911. May ? (one shot at Lanchow).
1913. April 12 (1), 19 (20). May 3 (11), 4 (1), 16 (6).

135. Numenius arquatus vel cyanopus.
1911. March 19 (seen). April 9 (seen), 18 (seen). May 5 (a party), 20 (5).
1912. April 5 (1), 6 (6), 17 (a flock). May 5 (seen).
1913. March 25 (1). May 12 (a flock), 18 (1).

136. Numenius arquata L.
1912. April 21 (3).
1913. March 31 (5). April 1 (3) (at Hsieh Chia Ying), 6 (4), 19 (1), 28 (1).

137. Numenius cyanopus Vieill.
1913. April 12 (2), 19 (10), 20 (seen), 23 (2), 25 (1). May 3 (1).

138. Numenius variegatus Scop.
1913. May 2 (3), 3 (8), 4 (8), 7 (1 flock), 16 (1), 24 (50).

139. Mesoscolopax minutus (Gould).
1913. April 14 (1), 25 (17). May 3 (6), 6 (20).

140. Totanus hypoleucus L.
1913. May 24 (3).

141. Totanus glareola (L.).
1912. May 5 (a few).
1913. May 4 (10), 11 (many).

142. Totanus ochropus (L.).
1911. May 28 (2 inland, apparently mated).
1913. April 29 (1). May 11 (several), 13 (seen).

143. Totanus fuscus (L.).
1913. March 27 (1), 31 (4). April 6 (1).

144. Totanus calidris (L.).
1912. March 31 (1).
1913. March 26 (seen at Hsieh Chia Ying). May 4 (1), 8 (8), 14 (3), 16 (2).

145. Terekia cinerea (Güldenst.).
1913. May 1 (1), 3 (1), 8 (10), 16 (3).

146. Calidris arenaria (L.).
1913. May 18 (6 or 7).

147. Tringa americana (Cass.).
1913. May 3 (5).

148. Tringa acuminata (Horsf.).
1911. May 22 (a small flock).

149. Gallinago cœlestis (Frenz.).
1911. April 2 (1), 9 (1), 14 and 16 (many), 23 (several). May 5 (many).
1912. April 5 (30), 21 (1).
1913. March 27 (2 at Hsieh Chia Ying). April 13 (1), 16 (2), 17 (1), 19 (1), 23 (2). May 3 (1), 4 (1), 11 (seen).

150. GALLINAGO STENURA (Bp.).
1912. May 15 (a few of this or possibly the next species).
1913. May 11 (several), 20 (4).

151. GALLINAGO MEGALA Swinhoe.
1913. May 11 (several).

152. SCOLOPAX RUSTICULA (L.).
1911. May 6 (1).
1913. May 20 (1).

153. LARUS RIDIBUNDUS L.
1911. March 26 (a number). April 9 and 20 (many), (1).
1913. March 15 (50), 16 (many), 17 and 19 (seen), 21 (many), 26 (50 at Hsieh Chia Ying). April 6 (many), 12 (seen), 15, 16, 20, 23, 24, and 26 (many). May 1 (many), 3 and 8 (seen).

154. LARUS VEGÆ vel CACHINNANS.
1911. May 11 (1).
1913. March 9 (4), 15 (10), 16 (many), 17 and 19 (seen), 21 (many), 30 (1). April 13 (3), 20 (seen), 23 (3).

155. STERNA ANGLICA Mont.
1913. May 4 (1).

156. STERNA LEUCOPTERA (Schinz).
1913. Seen by collectors, but no record of date.

157. STERNA SINENSIS Gm.
1913. May 22 (5), 24 (2), 31 (3).

158. STERNA sp.
1913. May 18 (a party of dark Terns, the size of the Noddy, seen fishing on the coast).

159. PHALACROCORAX CARBO (L.).
1911. April 20 (4).
1912. April 6 (6).
1913. March 28 (2 seen at Hsieh Chia Ying). April 6 (4), 8 (10), 16 (1), 19 (10), 23 (2), 25 (2).

160. ARDEA CINEREA L.
1911. March 19 (1). April 2 (1), 14 (several), 16 (small flock). May 20 (a few), 28 (1).
1912. March 31 (seen).
1913. March 20 (1), 21 (2), 29 (3 at Hsieh Chia Ying). April 1 (a few at Hsieh Chia Ying), 6 (6), 8 (1), 13 (1), 19 (2), 20 (1), 25 (1). May 1 (10), 11 (1), 13 (1), 31 (7).

161. Ardea manillensis Meyer.
1911. April 14 (many).
1913. May 11 (1).

162. Botaurus stellaris (L.).
1913. March 30 (1 at Hsieh Chia Ying).

163. Nyctiardea nycticorax (L.).
1913. March 29 (1 at Hsieh Chia Ying). April 29 (1).

164. Ardetta eurythma Swinhoe.
1911. May 28 (1).
1913. May 20 (1).

165. Butorides amurensis (Schrenck).
1913. May 31 (1).

166. Anser rubrirostris Hodgson.
1913. March 27 (1 at Hsieh Chia Ying), 29 (5 at same place).

167. Anser segetum (Gm.).
1911. March 31 (1 purchased).
1913. March 19 (2 shot), 20 (1 shot), 26 (2 shot), 29 (2 shot).

168. Anser serrirostris Swinhoe.
1912. March 10 (a large flock).
1913. March 15 (1 shot).

169. Anser middendorffi Severtz.
1913. March 29 (1 shot).

170. Anser albifrons (Gm.).
1911. March 15 (a flock). April 14 (10).

171. Anser erythropus (L.).
1911. April 14 (a flock).
1913. April 6 (a flock most probably of this species).

172. Anser sp.
1911. Feb. 27 (a flock), 28 (2 flocks). March 3 (passing), 4 (a flock), 5 (several flocks to S.W.), 12 (several flocks to S.W.), 19 (a great many passing), 20 to 23 (many flocks passing), 26 (many flocks passing, some settled), 28 (passing). April 9 (3), 10 (several flocks), 11 (a few flocks), 12 (hundreds on the flats), (1 flock passing), 13 (3 flocks), 14 (1 flock on the flats and many passing birds), 16 (seen on the plain).

1912. March 3 (1 flock on the plain), 7 (many flocks reported flying backwards and forwards), 10 (a great many), 11 (a great many), 16 (passing), 17 (many), 18 (2 flocks), 19 (a few), 22 (a few flocks), 31 (1). April 23 (5).

1913. March 9 (10), 10 (3 flocks), 11 (3/400), 15 (100), 16 (200), 17 (6), 18 (300), 19 (2/3000), 20 (100), 21 (2 flocks), 22 (100), 23 (passing), 25 (2 flocks), 26 (200 at Hsieh Chia Ying, some passing the port), 27 to 31 (many at Hsieh Chia Ying), 31 (1 flock passing port). April 1 (many at Hsieh Chia Ying, and several large flocks passing port), 2 (passing), 3 (200), 6 (100), 8 (60), 12 (1), 16 (some passing).

173. CYGNUS JANKOWSKYI Alphéraky.

1911. March 14 (1 shot).

1913. March 27 (1).

174. CYGNUS sp.

1911. March 5 (seen on the river), 19 (2 or 3 small flocks), 23 (1 large flock), 26 (2 on the flats), 31 (9).

1913. March 19 (16), 26 (5 at Hsieh Chia Ying), 27 (200 at Hsieh Chia Ying), 29 (30). April 1 (100 at Hsieh Chia Ying, passing at the port).

175. ANAS BOSCHAS L.

1911. March 5 (seen on river). May 5 (2 or 3).

1913. March 15 (50 or 60), 16 (10), 21 (200), 26 and 27 (seen at Hsieh Chia Ying). April 8 and 12 (seen), 13 (a flock).

176. ANAS ZONORHYNCHA (Swinhoe).

1913. March 20 (8), 27 (seen at Hsieh Chia Ying). April 6 (seen), 19 (10).

177. TADORNA CORNUTA (Gm.).

1913. April 6 (4).

178. CASARCA RUTILA (L.).

1911. April 2 (2 flocks), 9 (1).

1912. March 3 (3 small parties).

1913. March 1 (1 flock), 11 (30), 12 (15), 15 (100), 16 and 18 (100), 19 to 22 (many), 26 (30). April 6 and 9 (seen), 19 (5). May 3 (7).

179. ÆX GALERICULATA (L.).

1913. April 17 (1).

180. DAFILA ACUTA (L.).

1912. Feb. 25 (20). March 3 (a few), 10 (many), 31 (seen). April 5 (1 flock).

1913. March 15 (2/300), 16 (40), 20 (20), 21 (10), 26 and 27 (seen at Hsieh Chia Ying). April 6, 8, and 15 (seen).

181. MARECA PENELOPE (L.).
1911. April 12 (seen).
1913. April 6 (seen).

182. CHAULELASMUS STREPERUS (L.).
1911. April 12 (1 shot).
1913. April 6 (1).

183. SPATULA CLYPEATA (L.).
1912. March 10 (a few).
1913. March 20 (10). April 6, 9, and 15 (seen), 16 (7), 19 (a number), 20 (several), 26 (several). May 1 (4), 4 (seen), 14 (10).

184. EUNETTA FALCATA (Pall.).
1912. March 17 (seen).
1913. March 15 (10), 26 (some in market), 27 (seen at Hsieh Chia Ying). April 6, 8, and May 4 (seen).

185. NETTIUM FORMOSUM (Georgi).
1912. March 10 (many).
1913. March 15 (30 or 40), 16 (80), 20 (50), 26 (10 at Hsieh Chia Ying, and in the market at the port), 27 (seen at Hsieh Chia Ying).

186. NETTION CRECCA (L.).
1911. April 12 (seen).
1912. March 10 (many).
1913. March 27 and 30 (seen at Hsieh Chia Ying). April 6, 12, 13, 14, and 20 (seen at the port).

187. QUERQUEDULA CIRCIA (L.).
1913. March 26 (for sale). April 6 (seen), 19 (many), 24 (50), 26 (seen). May 1 (many), 3 and 4 (seen), 14 (10), 31 (20).

188. FULIGULA CRISTATA (Steph.).
1913. March 27 and 29 (at Hsieh Chia Ying, many on the latter date). May 4 (a wounded bird).

189. CLANGULA GLAUCION (L.).
1913. March 15 (1), 18 (3). April 15 (seen), 23 (4).

190. OIDEMIA CARBO (Pall.).
1913. Feb. 6 (1), 21 (1). April 14 (1 captured).

191. MERGUS MERGANSER L.
1911. March 5 (on river).
1913. March 15 (5).

192. Mergus albellus (L.).

1911. March 5 (on river).
1913. March 20 (8). April 1 (30), 8 (2).

193. Ducks sp.

1911. March 4 (2 or 3 flocks), 5 (several flocks), 16 (many), 19 (a great many), 20 (thousands), 21 (many), 22 (several), 23 (a few on the ponds), 26 (many flocks), 31 (a few flocks). April 3 (2 small flocks), 4 (numbers), 6 (a great many), 9 (a flock), 11 (a few flocks), 12 (many on ponds), 13 (a few). May 3 (1 flock), 5 (a few).
1912. Feb. 27 (a great number on the sea). March 7 (many reported flying backward and forward), 11 (a great many), 16 and 17 (many), 19 (a few), 21 (1 flock), 22 (a few flocks), 25 (1 flock), 29 and 31 (many on ponds). April 7 (1 flock), 9 (1 flock), 21 (seen).
1913. March 5 (1 flock), 15 (1 flock), 19 (great numbers), 21 and 22 (many), 26 (passing port), 28 and 29 (many of all kinds at Hsieh Chia Ying). April 13 (a few). May 31 (2 flocks of 40).

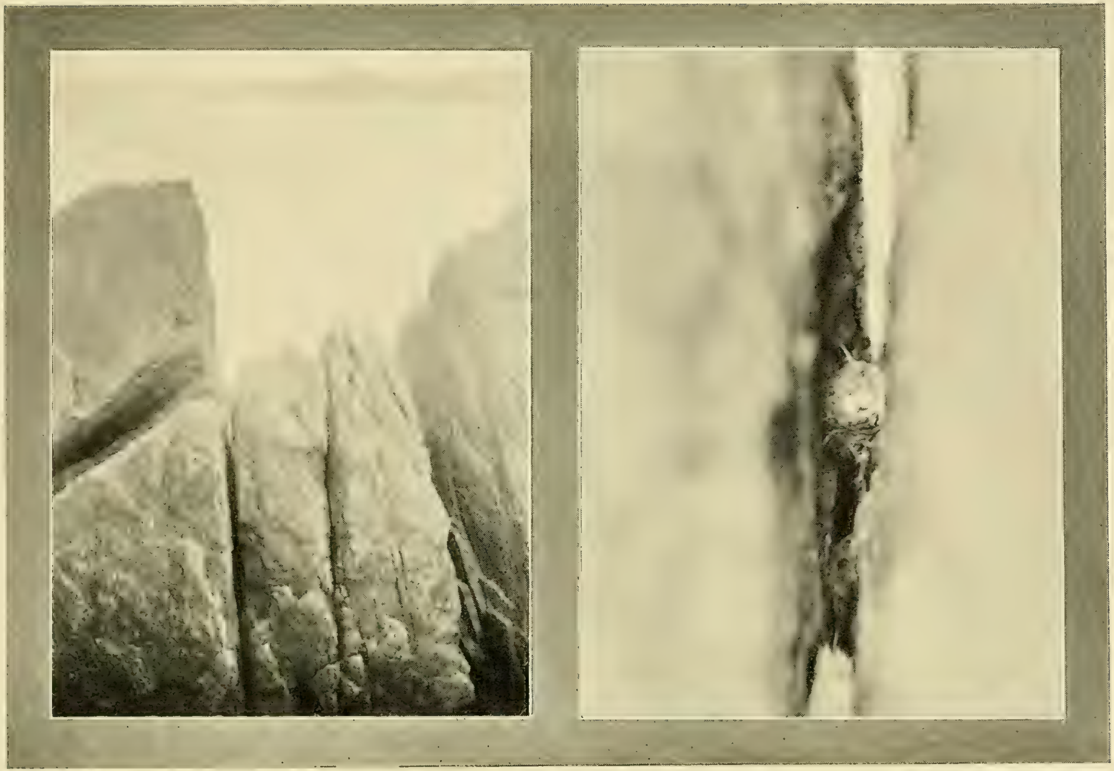
XXXVI.—*A Note on the Breeding of the White-rumped Swift* (Micropus pacificus). By Capt. Henry Lane Cochrane, R.N., M.B.O.U.

(Plate XXV.)

As there appears to be little published information on the subject of the breeding of the White-rumped Swift, a few observations made recently off the north-eastern coast of China may be of interest.

These beautiful birds are very abundant during the summer months on the Shantung littoral, and may be seen on a fine evening, flying over the summits of the rocky hills, hunting their prey, with a moderate amount of subdued screaming.

It was known that they bred in the neighbourhood, possibly among the many rocky ravines, though searches had proved ineffectual; also, it is on record that a breeding place in the shape of a rocky island had been visited, where,



NEST OF MICROPUS PACIFICUS.

however, breeding operations had been frustrated by a devastating army of hungry rats. Nevertheless, it was a considerable surprise to find a small colony of *Micropus pacificus* established on an unpretentious rock of the most modest dimensions, both in length and height. This particular rock, much broken up, some 50 yards long, and at its highest point 39 feet high, is situated 1400 yards from the mainland, and 400 yards from a respectably sized island, which latter is untenanted by Swifts of any description. Of limestone foundation, the rock is seamed with deep fissures and long narrow crannies, and it is in these recesses that the White-rumped Swift was found breeding in such elevated situations that sea and spray, in their most angry moments, are ineffective to disturb the tranquility of the site chosen. On landing upon the rock and commencing to climb over it, not a sign of any bird life was visible, with the single exception of a solitary shag (*Phalacrocorax pelagicus*) which flew off hurriedly from the far side of the rock near the water's edge, where it had been dreaming away the hot summer afternoon. Altogether seven Swift's nests were found ; of these two were in vertical crannies, the remainder in horizontal fissures, and all a full arm's length in. Only two nests contained eggs (June 6th), and only three Swifts were seen on the rock. The first nest found contained two eggs. The female bird was on the nest, and the male bird underneath the nest, clinging to it with both feet. So narrow was the cleft, that the birds were constrained to remain in one position, turning round being out of the question. The nest itself, wedged between the rock faces, was a small, perfectly round plate of straw, three and a half inches in extreme diameter, thickest at the rim and very slightly dished in the centre. A few feathers had been worked into the outer part of it, which was hardened with glutinous matter produced by the bird. The two birds at the first nest made no attempt to fly, and allowed themselves to be drawn out, a somewhat difficult operation. They clung very tenaciously to the fingers with exceedingly sharp claws, but when thrown into the air, immediately flew off with a strong swinging flight. A single bird flew from the second nest discovered, which was two feet down in a horizontal crack, and was similar in all respects to the first nest and contained three eggs. The eggs of the *Micropus pacificus* are typical Swift's eggs—pure white in colour and elongated in shape. Three apparently new nests were found close to each other in the same cranny, a long narrow aperture between two boulders. The remaining two nests were adjacent but separated, the whole area for the purpose being very restricted.

The rock was again visited five days later. All the nests now contained eggs, three of them one apiece only. No other nest beside that previously mentioned contained three eggs. One additional nest was discovered containing two eggs ; this made eight nests in all. A Swift was found on each nest, but both birds at only two nests. Three Swifts made their appearance when the rock was approached on the latter occasion, and continued to fly round during the visit.

XXXVII.—*Notes on Birds observed in the South Pacific Ocean during a voyage from Sydney to Valparaiso.* By CHARLES F. BELCHER.

ON Thursday, October 23, 1913, I left Sydney as sole passenger in the steamship 'Knight of the Garter,' Captain David R. Stephens, bound with 10,000 tons of Newcastle coal for Valparaiso, which port was reached in due course on Sunday, Nov. 16. With the aid of a pair of field-glasses, I was able to make from time to time observations (chiefly from the poop-deck) on the birds seen. These may be worthy of record as throwing light on the geographical distribution of certain of the species noted, and also as providing material for inferences as to the locality of their breeding-haunts, of which little is as yet known.

The route taken across the south Pacific was not quite the Great Circle track between the two ports, which has its apex a degree or two farther south. I subjoin a table showing the position at noon of each day, the repetition of Oct. 28 being occasioned by the crossing on that date of the 180th meridian.

Date.		Latitude.			Longitude.		
		°	′		°	′	
October	23	34	17	S.	153	9	E.
„	24	35	43	S.	158	1	E.
„	25	37	17	S.	162	48	E.
„	26	39	1	S.	167	44	E.
„	27	40	28	S.	172	51	E.
„	28 (No. 1)	42	33	S.	177	37	E.
„	28 (No. 2)	44	21	S.	176	54	W.
„	29	45	56	S.	171	33	W.
„	30	47	10	S.	166		W.
„	31	47	58	S.	160	18	W.
November	1	48	13	S.	154	21	W.
„	2	48	25	S.	148	23	W.
„	3	48	22	S.	142	14	W.
„	4	48	23	S.	136	2	W.
„	5	48	15	S.	130	3	W.
„	6	48	11	S.	123	59	W.
„	7	47	46	S.	117	56	W.
„	8	47	17	S.	111	35	W.
„	9	46	22	S.	105	35	W.
„	10	44	44	S.	100	9	W.
„	11	43	6	S.	94	39	W.
„	12	41	23	S.	89	20	W.
„	13	39	19	S.	84	31	W.
„	14	37	21	S.	79	50	W.
„	15	35	6	S.	75	34	W.
„	16	Valparaiso					

Oceanites oceanicus.* Yellow-webbed Storm-Petrel.

A few small dark Petrels were seen on Oct. 24, which I believe were of this species. I next noticed one at 2.30 P.M. on Oct. 26, flying about a hundred yards in the rear of the ship, the white rump being very conspicuous. I noted one again the following day, Oct. 27, about two hundred yards behind the ship. This species rarely approaches close enough for thorough examination through the glasses; and flying, as it does, close to the water, is frequently hidden in the trough of the great waves. Another was seen on Oct. 28 (No. 2); this time I could see the white belly as well as the rump. Two more were noted on Oct. 29; they were very swallow-like in their movements, skimming the waves; these were the last I saw.

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* The nomenclature used is that of Mr. G. M. Mathews' "Birds of Australia."

Pelagodroma marina. White-faced Storm-Petrel.

On Oct. 28 (No. 2), when off Pitt Island (Chathams), I observed a few Petrels, which, from their very erratic and swallow-like flight, I made out to be of this species. They were dark grey above, white below and much darker on the back, and smaller than the Prions; they have the habit of flicking the water with their wings and feet, which Prions have not. The Prions appear stouter, and have a bolder and more regular flight.

Reinholdia reinholdi. Brown-backed Petrel.

On Oct. 24 I noted a single specimen of this bird.

Neonectris tenuirostris. Short-tailed Petrel.

Oct. 23, a few seen. Oct. 26, one in the distance. Oct. 27 (passing through Cook Strait), numerous at some distance behind the ship; also many hundreds were seen to starboard. After leaving New Zealand waters they were not noticed.

Priofinus cinereus. Brown Petrel.

First noticed at 9 A.M. on Oct. 27, flying at about two hundred yards behind the ship. This was before entering Cook Strait. Oct. 28 (No. 2) (approaching Chatham Islands): two following. Oct. 29, at least a dozen together, nearer the ship's stern than the previous ones. The tail appears in flight bluntly wedge-shaped. Oct. 30, about twelve following. Oct. 31, about forty following at 8 A.M. Nov. 1, about twelve. Nov. 2, about twelve. Nov. 3, about twenty. Nov. 4, rather more than yesterday. Nov. 5, about the same as yesterday. Nov. 6, there are now at least a hundred following and flying about the ship. Nov. 7, rather fewer. Nov. 8, about the same as yesterday. Nov. 9, only about a dozen. Nov. 10, eight or nine only. Nov. 11, about twelve. Nov. 12, about twelve. Nov. 13, about twelve. Nov. 14, only one following at 2 P.M. Nov. 15, only one, the last seen.

Priocella antarctica. Silver-grey Petrel.

The first example appeared at 3 P.M. on Nov. 3. In flight and general appearance it somewhat resembles the Brown Petrel. A white patch shows prominently near the end of the wings. Nov. 11, at 3.30 P.M. one made two complete circuits of the ship. The tail appears slightly wedge-shaped. When this bird went to pick up something from the wake it turned a half somersault as it reached the water, reminding me of a Tumbler-Pigeon. Nov. 14, at 2 P.M. one was following in our wake. The bill is horn-colour, the nostrils very small, and tips of the wings dark above. Late in the evening at least four were seen. Nov. 16 (Valparaiso), this species became plentiful as we neared the coast, and in the harbour appears to take the place occupied by Jameson's Gull in Australian ports, for it was in considerable numbers and very tame, swimming in companies about the tiers of moored ships. Judging from the dirty state of the water and the great quantities of garbage floating about, the town sewers must discharge direct into the bay, and so provide sustenance for this and other species.

Macronectes giganteus. Giant Petrel.

These birds first appeared the day after we passed through Cook Strait, Oct. 28 (No. 1). There were seven of them. The heavy light-coloured bill shows up conspicuously, even at a distance, in comparison with the dark plumage. The flight is soaring, with a few fairly rapid wing-beats at intervals. Oct. 28 (No. 2), four following. Oct. 29, three seen. The tail appears bluntly wedge-shaped, suggesting the tail of *Aquila audax*. Oct. 30, all had disappeared. Oct. 31, one seen. This species is a heavy, lumbering, ugly bird compared with the graceful Sooty Albatros (*Phœbetria palpebrata*). No more till Nov. 4, when one was seen. None on Nov. 5, but one appeared on Nov. 6; none on Nov. 7, but one on Nov. 8, and another on Nov. 9. Then no more were noted till Nov. 14, when one was seen which appeared to have the tail rounded and not wedge-shaped. After this, I saw none till we entered Valparaiso harbour, where these birds were plentiful, picking up a living with the Silver-grey Petrels from sewer refuse.

The sole bird of the white variety of this species which was met with on the journey, appeared with dramatic suddenness at the vessel's stern on Nov. 8 at 2 P.M., when the ship's company was mustered on the poop for the committal to the deep of the body of a Chinese fireman who had died earlier in the day. The great bird, pure white save for a few dark ermine-like flecks, showed up with startling clearness against the storm-clouds. None of the officers had ever seen such a bird, though this was their sixth voyage on that track.

Petrella capensis. Spotted Petrel.

The first was seen at midday on Oct. 26. The large white patches on upper surface of the wings are very noticeable when spread in flight. This bird flies with a rapid motion of the wings alternating with soaring, reminding one rather of the Black-cheeked Falcon (*Falco melanogenys*). By 2 P.M. there were three present. Oct. 27 (approaching Cook Strait), twenty at least following. Within the Strait itself we saw none. On Oct. 28 (No. 1), the number had increased to forty or more, but next day, Oct. 28 (No. 2), these had diminished to half a dozen, and on Oct. 29 to one. On Oct. 30 there was still a single individual to be seen, but next day, Oct. 31, there were three; on Nov. 1 two; two also on Nov. 2 and on Nov. 3. On Nov. 4 none were noted, on Nov. 5 one; no more were then seen till Nov. 11, when a pair were following. On Nov. 12 there was but one to be seen, on Nov. 13 two. At 2 P.M. on Nov. 14, at least twenty were following in our wake. On Nov. 15 there were twelve, and a few followed the ship right up to the South American coast at Cape Curanmilla. They were not seen inside Valparaiso harbour.

Prion (? genera **Pachyptila, Pseudoprion, Heteroprion**).

Oct. 25, one seen at 5 P.M. Oct. 27, abreast of Stephens Island, Cook Strait, I saw hundreds of Prions, most of them small, with light backs, and one larger, with a dark back; also two or three small ones, which flew with grebe-like rapid wing-beats, not swallow-like as the larger ones. Oct. 28 (No. 1), a good number seen at 9 A.M., and at 2 P.M. there were thousands of Prions in every direction about the ship, often fifty to a hundred on the water in a bunch together. Towards evening we left them behind. Oct. 28 (No. 2), a couple seen at 9 A.M. At 2.30 P.M. several noted. Oct. 29, twenty or more in one lot. Oct. 30, at noon a large number were following with other species in the ship's wake: they were also numerous in front and at the sides of the ship, and were easily the commonest bird from Cook Strait to this point. Oct. 31, countless Prions all about the ship. At 4 P.M. they seemed chiefly to be making west, opposite to the ship's direction. I judge that there are innumerable millions of Prions in these seas. They harmonise well with the sea-scape, their backs being blue-grey, the colour of the southern Pacific waves, and their bellies, as they turn in the sun, are white as the foam that breaks on the waves' edges beneath them. Nov. 1, only a few about in place of yesterday's great numbers, and this was also the case on every day till Nov. 12, on which day I did not see any. Thereafter, until reaching port on Nov. 16, I saw odd birds every day.

Diomedea exulans. Wandering Albatros.

Oct. 23 (off Sydney), numerous. Oct. 24, more seen. Some were all dark brown but for the belly and head: these divided below by a broad pectoral band of brown. Oct. 26, only eight following astern in the early morning; at 12.35 the number suddenly increased to fifteen or more as garbage was thrown over. Oct. 27, about twelve round the ship. Oct. 28 (No. 1), four seen. Oct. 28 (No. 2), one following in the wake. Oct. 29, one following, later one or two more: I note that some are white only on the middle of the back, others right to the centre joint of the wings. Oct. 30, three in our wake. Oct. 31, 8 A.M., one very fine old one, with wings nearly all white above. Nov. 1, one seen. Nov. 2 one seen. Nov. 3, one or two seen (one with a sort of chocolate crown). Nov. 4, one or two seen. Nov. 5, none in morning, one in afternoon. No more seen till Nov. 9, when one seen. Nov. 11, one noted. Nov. 13, a fine one in sight. Nov. 14, several of great size seen, among them one young bird all brown above. Nov. 15, half a dozen seen. Nov. 16 (just off Valparaiso), one or two following. Captain Stephens says that they are more abundant in heavy weather.

Thalassarche melanophrys. Black-browed Mollymawk.

Oct. 23, very plentiful. The pronounced eye-stripe, yellow and black beak, and dark colour right across upper surface of the wings and back are very noticeable and contrast with the Wandering Albatros, whose bill is horn-colour and back whitish. The angle of the feathers at the base of the bill in the Black-browed species is so slight that the line appears nearly straight. Oct. 26, two seen at different times. Oct. 27 (nearing Cook Strait), none seen. Oct. 28 (No. 1), none seen. Oct. 28 (No. 2) (approaching Chatham Islands), one following astern. Oct. 29, three seen. Oct. 30, three following in our wake. Oct. 31, one following, but by next day this had disappeared, and I saw no more of these birds.

Nealbatrus chlororhynchus. Yellow-nosed Mollymawk.

On Oct. 28 (No. 2), when off Pyramid Rock, Chatham Is., I noticed a pair of what I take to have been this species, the most conspicuous mark being the dark grey of the head and neck, showing almost as dark as the back. On Oct. 29, at 5 P.M., I again saw two of them. On Oct. 31, one was following the ship. On Nov. 1, one of these birds came much closer than any had previously, and I could note that the upper part of the head and sides of the neck were dark grey; the culmen bright yellow, the rest of the bill appearing black. I could not see whether there was any break in the yellow before the tip of the bill. In flight, they seem smaller than the Black-browed species. On Nov. 3 at least a dozen of these birds followed the steamer. The grey about the head varies a good deal. In some the whole head is grey, in others a strip of grey comes down and appears almost to meet in a neck-band, leaving a white mask like an Owl's. These last were commoner than those with all-grey heads, and there were gradations between. On Nov. 4 I noted four, and two or three were observable until Nov. 8, on which day the numbers increased to eight. On the 9th, only a few were seen, and so till Nov. 12, when I noted six, and that at least one had yellow right along the culmen to the tip. Some of the others seemed to have darker bills with less yellow ; probably these are age differences, seeing that almost every bird showed individual variations in the amount of grey on the head and neck. On the 13th I noted two or three birds, none on the 14th, and one on the 15th. Approaching Valparaiso, I saw a bird which was about the size of this, but had a black bill and a pure white head.

Phœbetria palpebrata. Light-mantled Sooty Albatros.

These birds were not met with until we had passed the Chatham Islands. On Oct. 29, at 12 noon, the first appeared ; it was very noticeable in contrast with the Giant Petrels, the Albatros, though of about the same size, showing clearly the finer bill, lighter and more greyish body (the head strikingly dark), and being altogether a slenderer, handsomer, and more graceful bird, tapering away from shoulder to pointed tail. The light mantle (contrasting with the darker wings) is easily discernible at some little distance, and as the bird gets closer, the white circlet of the eye can plainly be seen. At 5 P.M. on the same day, two were flying about the ship. Two were seen on the following day, Oct. 30, and one on Oct. 31. On Nov. 1 I saw three, the same number on Nov. 2, but from this date onward no more were seen.

Bruchigavia novæ-hollandiæ. Silver Gull.

A dozen or more flew about the ship when abreast of Stephens Island, Cook Strait, their dark red-brown bills contrasting with the clear yellow bills of *Larus dominicanus*.

One perched on the ball on the top of each mast, while others took up positions in the rigging. We saw none after leaving New Zealand.

Larus dominicanus. New Zealand Black-backed Gull.

On Oct. 27, at 11 A.M., when fifteen miles off Cape Farewell (Cook Strait), the first of these birds flew over the ship. By noon, off Farewell Spit, half a dozen were about us, among them an immature bird showing the dark terminal tail-band. Night fell as we passed the entrance to Wellington, and we saw no more of this species until on Nov. 16 off Cape Curaumilla (Chile), where several came out to meet us. In Valparaiso harbour they are very numerous, perching on the giant iron buoys.

Catharacta lönnbergi. Australian Skua.

I saw but a single example of this bird on the voyage, namely, on Oct. 31, in very cold weather, when it was blowing a gale and there had been a few snowflakes. This bird appears in flight as of a heavy, squat form, with roundish tail; the white markings near the ends of the wings are very noticeable.

XXXVIII.—*Report on the Birds collected by the late Mr. Boyd Alexander (Rifle Brigade) during his last Expedition to Africa.*—Part I. *The Birds of Prince's Island.* By DAVID A. BANNERMAN, B.A., M.B.O.U., F.R.G.S.

THE following paper is the first of a series which I hope to publish dealing with the collections made by the late Mr. Boyd Alexander on his last memorable expedition to Africa, from which, as all the world knows by now, he never returned. Much has been written of Boyd Alexander since his untimely death, which need not be recapitulated here.

He made a great reputation for himself as an ornithologist and explorer, and the present collections, which I have been privileged to work out, show that his admirable qualities as a collector had in no wise diminished. The birds which he sent home are in point of fact of exceptional value, completing, as they do, his ornithological survey of all the islands which lie in the Gulf of Guinea, besides adding very materially to our knowledge of the avifauna of the Peak of Kamerun.

I have divided the collections into five sections representing the five distinct localities from which the birds were obtained. I propose to deal with each collection separately, and to publish a report* under each of the following headings :—

I. The Birds of Prince's Island.
II. The Birds of St. Thomas'.
III. The Birds of Annobon.
IV. The Birds collected on the Peak of Kamerun and immediate neighbourhood.
V. The Birds collected in the hinterland between Kamerun and Abechir (French Soudan).

In working out the birds from the three islands in the Gulf of Guinea, I have essayed to give a complete list of the species to be met with in each island, apart from whether Alexander himself obtained specimens or not. At the same time, every example which is contained in the Alexander collection has been enumerated, and every species so represented will be found marked with an asterisk.

At Alexander's personal request the collections with which I intend to deal have been presented to the British Museum, where they will shortly be incorporated in the National Collection. As already mentioned, the birds obtained are of very special interest, and many of the species, particularly those from the islands, were hitherto only poorly represented or altogether wanting.

The map (text-fig. 2) which appeared in my paper on "Birds from the West Coast of Africa" (Ibis, 1912, p. 223) gives a good idea of the position of all the islands in the Gulf of Guinea and their relation to the African mainland.

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* As the reports are published officially on behalf of the British Museum, I have conformed throughout to Mr. Ogilvie-Grant's views of nomenclature, as it is under his direction the papers are published.

Alexander had already made extensive collections in the island of Fernando Po, and it may now safely be asserted that the British Museum possesses unrivalled material from the four principal islands in the Gulf of Guinea.

I should like here to express my sincere thanks to Mr. W. R. Ogilvie-Grant for placing these valuable collections at my disposal, and for the help which he and his able assistant, Mr. Wells, have afforded me in preparing my report.

To Count Salvadori I owe a debt of gratitude for having already "made the way easy." His excellent papers on the Ornis of Fernando Po, Prince's Island, St. Thomas', and Annobon, which he published in 1903, have cleared up many vexed questions, and I feel that my own contributions are only supplementary to his careful and exhaustive work.

While engaged on the first of these papers, "The Birds of Prince's Island," in addition to Boyd Alexander's notes I have particularly made use of the following works dealing with the Ornithology of the island:—

Dohrn. P. Z. S. 1866, pp. 324–332.
Keulemans. Nederl. Tijdschr. v. Dierk, iii. 1866, pp. 374–401.
Barboza du Bocage. Jorn. Sci. Lisboa, xxix. 1880, pp. 71–72; id. (2) vii. 1903, pp. 46–52.
Sousa. Jorn. Sci. Lisboa, xlv. 1887, pp. 42–44.
Salvadori. Orn. Golfo d. Guinea, i. pp. 1–16, in Mem. Accad. Sci. Torino, 1903.
Shelley. Birds of Africa, vols. i–v., 1896–1912.
Reichenow. Vögel Afrikas, vols. i–iii., 1900–1905.

Several less important papers have been referred to, but I have refrained from giving a bibliography, as Count Salvadori has already published at the end of each of his papers a comprehensive list dealing with the literature up to 1901.

The other works dealing with the Ornis of Prince's Island which have appeared since 1901 are enumerated in the list, the most important of which are those by Count Salvadori and Professor Bocage.

While still in Prince's Island Alexander forwarded to

Mr. Ogilvie-Grant the description of an apparently new Grey Parrot from the island, which was published in the Bull. B. O. C. xxiii. 1909, p. 74. This bird he proposed to call *Psittacus princeps.* It is, of course, only a geographical form of the African Grey Parrot *Psittacus erithacus,* and will be found in this paper under the name *Psittacus erithacus princeps.*

Throughout this paper I have given references to Count Salvadori's work on Prince's Island which is quoted as Orn. Golfo d. Guinea i., to the paper by Professor Bocage published in 1903, and to Captain Shelley's 'Birds of Africa,' so far as it goes. It is greatly to be regretted that Captain Shelley's valuable work has not been completed. At the present time there is not a single monograph of the Birds of Africa in the English language, despite the magnificent African material in the British Museum.

The following eleven species I consider are almost certainly confined to Prince's Island, although two or three have been (probably erroneously) recorded as having been obtained on the mainland:—

1. *Lamprocolius ignitus* (Nordm.).
2. *Dicrurus modestus* Hartl.
3. *Hyphantornis princeps* (Bonap.).
4. *Linurgus rufobrunneus* Gray.
5. *Cinnyris hartlaubi.*
6. *Zosterops ficedulina* Hartl.
7. *Speirops leucophæa* (Hartl.).
8. *Cuphopterus dohrni* Hartl.
9. *Turdus xanthorhynchus* Salvadori.
10. *Psittacus erithacus princeps* Alexander.
11. *Haplopelia principalis* (Hartl.).

To these must be added *Estrilda astrild sousæ* Reichw., which is restricted to Prince's and St. Thomas' Islands, and *Turturœna malherbei* (Verr.) inhabiting Prince's, St. Thomas', and Annobon Islands.

Alexander landed on Prince's Island on February the

24th, 1909, and remained until March the 23rd. He then proceeded, *viâ* Fernando Po, to the mainland to commence his now memorable exploration of the Peak of Camaroon. Alexander was gifted with excellent descriptive powers, and as Prince's Island, save to a very few, is not by any means well known, I shall make no apology for including his graphic notes* on the physical conditions of the island at the time of his visit.

The diaries which contain Boyd Alexander's field-notes on the present collections and the descriptions of the islands which he visited, came to light under most tragic circumstances, which have already been related in Mr. Herbert Alexander's book He writes :—"When all else of value that he possessed had been looted by his murderers, the two volumes of his diary . . . . . . were found untouched in a broken box upon the battlefield of Ilarné by the French, who, led by the warning, pressed forward and recovered his bones. Nearly a year afterwards the diary was handed over by the French authorities to Miss Macleod . . . . . ."

The following account of Prince's Island I have pieced together from the "Diary of his last Journey," to which I have already called attention. Although in that case the published notes were arranged under various dates, I have attempted to connect the many allusions to the character of the country so that some idea may be formed of this tropical island and the conditions under which the birds live. If fuller details are needed Mr. Herbert Alexander's book will satisfy every requirement.

Boyd Alexander's Description of Prince's Island.

The appearance of the island from the seaboard is very luxuriant; the banks clothed right down to the water's edge with thick forest-growth. We made our camp not far below the roça. I am close to the Papagaio River, and it comes as rather a surprise considering the small size of the island. Where we are encamped it must be quite fifteen yards in width. There is not much water in it, presenting now—February the 26th—the appearance of a small Scottish burn. As I write, my camp presents a delightful picture, a pretty spot almost surrounded with luxuriant wood, but here and there, through openings in the trees towards the south, one catches glimpses of mountainous hills, bathed in the wonderful blue which only distance can give.

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* These notes have already been published in a much wider form in the book entitled 'Boyd Alexander's last Journey' edited by his brother, Mr. Herbert Alexander, and published by Edward Arnold. I am much indebted to Mr. Alexander for allowing me to make use of this work, which, besides being a memoir, also contains Boyd Alexander's private diary of his last Journey.

At varying distances from our tents the men have constructed their rough huts of palm leaf, grouped, I might almost say, according to the races, the Hausas in one quarter, the Mendies in another, but all forming an outside ring to the tents, and then when night comes on, each group of men sit cross-legged upon the ground round brightly burning log fires, all in merry mood. . one perhaps amongst them holding forth to the others as a story-teller . . . . . the place looks more like a native settlement than a camp. Two days collecting gave us nearly all the known species here. We are collecting on an average fifteen birds a day, and José * is working very well.

This portion of the island is very well cultivated, but there are still a few patches here and there of forest growth. The fruit consists of bananas and oranges, which are rather sour, and avocado pears. A great deal of land where we are has been cleared, that is to say, tall forest trees left here and there, but the ground underneath shorn of everything for the planting of cocoa, so the island in many parts has been bereft of its forestial beauty,

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* José Lopez—Alexander's faithful Portuguese collector, who had been in his service for 13 years and accompanied him on all his important expeditions. José, I regret to say, died in West Africa in 1912 of blackwater fever while on an expedition with Captain J. J. Brocklebank. From all accounts he must have been the very model of a collector. Many hundreds of skins, now in the British Museum, bear testimony to his skill as a taxidermist; while his powers of organisation and his skilful handling of the carriers contributed in no small degree to the success of Alexander's many expeditions.—D. A. B.

which it must have possessed at one time. The steep valleys must have looked extremely rich when clothed in masses of tropical foliage, but now all is laid bare, and the course of every stream can be traced.

The island is remarkably well watered; streams of sparkling clearness are found in nearly every valley. The two big streams are the Papagaio and another corresponding to it which flows down the other side of the mountain into West Bay.

On March the 4th, I left to make a camp on a high ridge-like plateau close to the Peak. This ridge is very narrow and falls down abruptly to the north, and to the south one looks down into a steep valley, on the other side of which rises the big hill covered with thick forest growth. By my aneroid the height of the ridge is about 1800 feet.

Looking to the north there is a splendid view over the greater portion of the island, I should say at least two-thirds of it. The whole of this is undulating and thickly covered with trees, except where the wood has been thinned out for the cocoa plantations. The harbour is of remarkable form, cutting deep into the northern end of the island. I might liken it to the wide estuary of a river. The remaining third of the island—the ridge where my camp is now, marking its northern boundary—is the mountainous portion of the island. Here there are one or two peaks of remarkable shape; Papagaio itself is like the top of a pepper-castor. Here and there round its side the bare volcanic stone can be seen, too steep for tree-growth, but everywhere else it is thickly clothed with trees. Then there is the Carriote, a bare pillar of stone, and a small edition of the Dog-Peak on San Thomé. The island, however, is nothing like so mountainous as San Thomé, which is a mass of wooded hills and mountains.

Since we have been on the island there has been very little rain, now and again a sharp fall at night or early in the morning or towards evening, and generally coming from the north. The thickly wooded nature of the mountain raised my hopes of getting some interesting species, but my wishes were not realised. I found wonderful forest-growth on the hill, and though I had a path cut almost to the top to facilitate my collecting work, I was not rewarded. It was quite sad to find all this fine forest absolutely devoid of bird-life—nothing but silence or subdued tones everywhere.

On March the 9th I left for a large roça called Sundy, situated in the north of the island, and arrived there on the 10th. In this portion of the island there is much forest-growth, that contains many swampy, sluggish streams, reminding one very much of the Congo forest. It is as silent as the grave, and there is no bird-life.

The island is being rapidly opened up with light tramways to all the plantations ; the average amount of cocoa produced on the island in the year is 120,000 bags of 112 lbs. each. The planters tell me they confidently hope to double this output when all the tram-lines are completed.

On March the 17th I left for West Bay, where there is another large roça. We passed through it and made our camp a mile or so to the south. On the 19th I left by a short cut across the hills to our old camp, at the base of the Papagaio. The road which we followed to cross the hills, though much overgrown, is a wonderful piece of engineering.

We left our camp on March the 23rd, and arrived about 2 o'clock at the Port.

1. Lamprocolius splendidus.

Lamprocolius splendidus (Vieill.) ; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 9.

Lamprotornis splendidus Bocage, Jorn. Sci. Lisboa, 1903, p. 49 ; Shelley, Birds of Africa, v. 1906, p. 65, pl. xlv.

This Starling is recorded from Prince's Island by Dohrn, who says that it is very rare and frequents the same localities as *Lamprocolius ignitus*. It is also mentioned by Keulemans.

Neither Fea nor Boyd Alexander appear to have seen it on Prince's Island, which, however, is not surprising. The range of *Lamprocolius splendidus* is very wide, extending from Camaroon to Angola and eastwards across central Africa. Both Salvadori and Bocage consider that the existence of this species on Prince's Island as a resident requires confirmation.

2. ***Lamprocolius ignitus.**

Lamprocolius ignitus (Nordm.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 8; Bocage, Jorn. Sci. Lisboa, 1903, p. 49.

Lamprotornis ornatus (Daud.); Shelley, Birds of Africa, v. 1906, p. 64.

a–d. ♂ ♀ ad. et imm. 27. ii. 09.
e. ♂ ad. 28. ii. 09.
f. ♂ ad. 2. iii. 09.

This very beautiful glossy Starling is almost certainly restricted to Prince's Island. It is said by Dohrn to live in high trees and to be very common in the high parts of the interior, where it is seldom disturbed. The bird has been recorded from Senegal, St. Thomas', Gaboon, and Angola! Sharpe (Cat. Birds, xiii. pp. 174–5), Shelley and Salvadori (*vide supra*) consider these localities to be erroneously applied to this species.

On Prince's Island Alexander found it everywhere in the vicinity of his camp near the Papagaio River.

3. ***Dicrurus modestus.**

Dicrurus modestus Hartl.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 4; Bocage, Jorn. Sci. Lisboa, 1903, p. 48.

a, b. ♀ ad. 26. ii. 09.
c–e. ♂ ♀ ad. 27. ii. 09.

[Iris claret-red.—B. Alexander.]

This Drongo is distinguished from all the other west African species by its heavy bill and larger size. Moreover, it is confined to Prince's Island, and there is therefore no excuse for confusing it with birds from the mainland. This species has been erroneously recorded from Liberia, but the specimen in question, as I have already pointed out

(Ibis, 1912, p. 231), ought probably to be referred to *Dicrurus assimilis atactus*.

The Prince's Island Drongo is said by Dohrn to be very indolent during the day and to show a great ability in the imitation of other bird's notes. Keulemans gives a long description of its habits (Nederl. Tijd. Dierkunde, iii. 1866, p. 378).

4. ***Nigrita bicolor brunnescens.**

Nigrita bicolor (Hartl.); Bocage, Jorn. Sci. Lisboa, 1903, p. 49; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 7.

Nigrita brunnescens Reichw.; Shelley, Birds of Africa, iv. 1905, p. 140.

a. ♀ ad. 5. iii. 09.
b. ♂ ad. 8. iii. 09.

Boyd Alexander obtained two examples of this little Weaver-Finch on Prince's Island which he evidently considered would prove to be a new species. The fact is duly recorded in his diary, which is published in book-form ('Boyd Alexander's last Journey,' p. 95). As a matter of fact, the bird is undoubtedly referable to *N. b. brunnescens* and had already been obtained on Prince's Island by Dohrn (P. Z. S. 1866, p. 328). Curiously enough, Dr. Hartlaub wrongly identified this bird as *Nigrita bicolor*, which he himself had named. Dohrn, in the paper cited above, appears to have noted the differences between the Prince's Island bird and Hartlaub's description of *N. bicolor*, but nevertheless referred it to this species.

The Southern Chestnut-breasted Negro-Finch is evidently a rare bird on Prince's Island. Dohrn notes that it is uncommon, and Keulemans found it to be "of a solitary, shy nature, frequenting the rivulets and mountain streams, disappearing quickly into the rank vegetation when disturbed. Its song resembles that of the Yellow Hammer (*Emberiza citrinella*)." Alexander himself mentions that it is a rare bird. The two specimens sent home were obtained on a high ridge close to the Peak, at an elevation of about 1800 feet.

5. Quelea erythrops.

Quelea erythrops (Hartl.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 8; Bocage, Jorn. Sci. Lisboa, 1903, p. 49; Shelley, Birds of Africa, iv. 1905, p. 117.

In the days when Dohrn and Keulemans visited Prince's Island (about 1865), the Dark-throated Red-headed Dioch was commonly seen in swarms of from thirty to eighty birds in a flock, often in company with *S. cucullatus*.

Keulemans records that this species was found breeding on Prince's Island from June to September.

Count Salvadori notes in his paper that it is very singular that Fea did not meet with this species when he collected on the island in 1901. Boyd Alexander likewise failed to secure specimens, and does not mention *Q. erythrops* in any of his notes referring to this island. The type locality of this species is St. Thomas' Island, but, as is well known, the bird has an extensive range on the mainland.

6. *Spermestes cucullatus.

Spermestes cucullatus (Swains.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 8; Bocage, Jorn. Sci. Lisboa, 1903, p. 50; Shelley, Birds of Africa, iv. 1905, p. 167.

a–c. ♂ ad. 6. iii. 09.
d. ♂ ad. 7. iii. 09.

According to Keulemans (*vide* Shelley), Swainson's Bronze Mannikin is an exceedingly plentiful species on Prince's Island. It is evidently marvellously prolific, judging from Keulemans' account, for he mentions "one pair which produced seven broods during the year with an average of six young ones"! The same observer notes that they fall an easy prey to the Wood-Kingfisher (*Halcyon dryas*), which "sweep up the young birds in their bills one after another"!

Spermestes cucullatus is not by any means confined to Prince's Island, but has a wide distribution in equatorial Africa. In the Gulf of Guinea Islands it is also found on

St. Thomas', but has not yet extended its range to Annobon. In Fernando Po its place is taken by *Spermestes poensis*.

7. Estrilda astrild sousæ.

Estrilda astrild (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 7; Bocage, Jorn. Sci. Lisboa, 1903, p. 50.

Estrilda astrild sousæ Reichenow, Vög. Afr. iii. 1904, p. 182.

Estrilda occidentalis sousæ Shelley, Birds of Africa, iv. 1905, p. 200.

Dr. Reichenow has described the Waxbill from St. Thomas' Island as a geographical race, and to this form doubtless belong the birds which have been obtained on Prince's Island. Reichenow characterises this subspecies as follows: "Similar to *E. a. minor* with clear white cheeks, but the ground-colour of the upperside somewhat greyer and paler."

Unfortunately, Alexander did not succeed in obtaining any specimens of this Waxbill on Prince's Island, and the single example which he procured on St. Thomas' is insufficient to determine whether a race founded on such slight characters is worth keeping up.

Captain Shelley entered *E. a. sousæ* as a subspecies of *E. occidentalis*; while Boyd Alexander, in his excellent paper on the "Birds of Fernando Po" (Ibis, 1903, p. 353), stated that he was unable to find any constant characters to separate *E. minor* from *E. occidentalis*.

When Dr. Reichenow described the present subspecies, it would have simplified matters if he had compared *E. a. sousæ* with *E. a. astrild*—the typical species—instead of with the east African subspecies *E. a. minor*. In any case, the differences which exist between *E. a. sousæ* and *E. a. occidentalis*, the resident form from the island of Fernando Po and the neighbouring coast of Africa, should have been clearly explained. Lack of material from St. Thomas' and Prince's Islands prevents my doing so in the present paper.

Curiously enough, Dohrn does not mention any *Estrilda* as inhabiting the island during his visit. Keulemans, on the other hand, found a few ocasionally in company with the *Spermestes*. The natives had no special name for this bird, so that we may assume it was not by any means plentiful. Keulemans appears to have seen many more on St. Thomas' than he did on Prince's Island.

8. *Hyphantornis princeps.

Hyphantornis princeps (Bonap.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 7.

Symplectes princeps Bocage, Jorn. Sci. Lisboa, 1903, p. 50.

Xanthophilus princeps Shelley, Birds of Africa, iv. 1905, p. 468, pl. xlii. fig. 2.

a. ♀ ad. 27. ii. 09. No. 3. Wing 83 mm. (rather worn).
b. ♂ [♀] ad. 28. ii. 09. No. 1. „ 89 „
c. ♂ [♀] ad. 28. ii. 09. No. 2. „ 84 „
d. ♂ [♀] ad. 28. ii. 09. No. 4. „ 87 „
e. ♂ imm. 28. ii. 09. No. 6. „ 88 „
f. ♂ ad. 7. ii. 09. No. 5. „ 89 „

It appears that the sex in several of the above-mentioned specimens has been wrongly determined by the collector. The males can be distinguished at a glance by the rufous crown and by the absence of any white on the belly. The immature male example (specimen *e*) has the rufous markings of the head and sides of the neck just appearing. In other respects the plumage is similar to that of the adult bird, but less brilliant. Much confusion has taken place over the distribution of this species. Sharpe, in the 'Catalogue of Birds,' xiii. p. 449, gives the range as "West Africa from Lagos to Gaboon and the interior of the Congo State, Prince's Island." Apparently Sharpe founded his remarks on Hartlaub (Orn. W. Afr. p. 134), while a specimen is also said to have been obtained in Angola and to be in the Philadelphia Museum. Cassin (Pr. Acad. Nat. Sci. Phil. 1855, p. 439) mentions another example in the Museum of the Philadelphia Academy said to have been procured in Lagos by Mr. J. L. Burt.

With regard to this example, I wrote to Mr. Witmer Stone, who is in charge of the Museum, and asked him to examine the skin mentioned by Cassin. This he has very kindly done, and writes as follows :—"I have examined the specimen of *Symplectes princeps* referred to by Cassin, and it appears to be a male of that species. Unfortunately, we have no other authentic *S. princeps* for comparison, but it agrees accurately with the description in the 'Catalogue of Birds,' except that the wing measures 3·5 instead of 3·4 inches. I am, however, by no means willing to accept the locality 'Lagos' without serious question. Dr. Burt (the collector) was a surgeon in the U.S. Navy, and as *the specimen bore no original label, the locality was evidently supplied by Cassin from memory,* and the possibility of confusing localities would be very great; therefore I have no doubt that Count Salvadori is correct in his surmise as to its distribution." I should like here to thank Mr. Witmer Stone for the trouble he has taken on my behalf. Count Salvadori expressed the opinion in his paper in 1903 (*vide supra*) that this Weaver-Finch is confined to Prince's Island, and in this conclusion I certainly agree with him. Shelley shared this view and gives a figure of the male in his 'Birds of Africa,' pl. xlii. fig. 2.

Of the habits of this Weaver-bird, both Dohrn and Keulemans have supplied notes. The former writes :—"I observed them building nests and hatching in May, and again in June. . . . Their nest is always attached to the end of long and thin branches or leaves of a palm-tree. It forms a cone 15 to 18 inches long and about 9 or 10 inches in diameter at the base; the small aperture is underneath. . . . The eggs are two in number and light blue." Shelley has the following note supplied by Keulemans :—"The species is common in all parts of the island. . . . These Weavers breed two or three times in the year. The eggs, four or five in number, are pale blue."

9. *Linurgus rufobrunneus.

Buserinus rufilatus Hartlaub, P. Z. S. 1866, p. 328; Bocage, Jorn. Sci. Lisboa, 1903, p. 50.

Linurgus rufobrunneus G. R. Gray; Shelley, Birds of Africa, iii. 1902, p. 172; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 6.

a–d. ♂ ♀ ad. 5. iii. 09.
e. ♀ ad. 8. iii. 09.
f. ♀ ad. 10. iii. 09.

This species is confined to Prince's Island, its place being taken on the island of St. Thomas by *Linurgus thomensis*. The representative of the genus on Fernando Po and the adjoining mainland—*Linurgus olivaceus*—is entirely different from both these forms in the style of the colouring.

Dohrn considered it to be a rare bird, confined to a very restricted locality of the West Bay, where it lived in bushy uncultivated places.

10. *Cinnyris hartlaubi.

Cyanomitra hartlaubi (Verr.); Shelley, Birds of Africa, ii. 1900, p. 135.

Cinnyris hartlaubi Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 4; Bocage, Jorn. Sci. Lisboa, 1903, p. 48.

a. ♂ ad. 5. iii. 09.
b. ♀. 6. iii. 09.
c. ♂ ad. 8. iii. 09.
d. ♂ ad. 9. iii. 09.
e, f. ♂ ad. 10. iii. 09.
g. ♂ imm. 11. iii. 09.
h. ♂ imm. 15. iii. 09.

The type-specimen of *C. hartlaubi* (*ex* Verreaux Coll.) is said to have been obtained in Angola (Hartlaub, Orn. W. Afr. p. 50). Unfortunately, the localities of Verreaux skins cannot be relied upon, and it is now almost certain that *C. hartlaubi* is confined to Prince's Island. No specimens have ever been taken on the mainland as far as we know.

This species is said by Messrs. Dohrn & Keulemans to be fairly common all over the island except in the dense forest, where its place is taken by *C. obscurus*. Apparently it breeds all the year round, for Keulemans saw young birds in every month of the year. A long description of the habits of this Sunbird is given by Capt. Shelley in his 'Birds of Africa.'

Specimen *g* in Boyd Alexander's collection is almost adult, but has not yet obtained the metallic violet-shaded blue throat and breast, which are dull sooty-grey.

Specimen *h* is a younger male, with the underparts bright olive-yellow.

Specimen *b* is apparently a young female and has the entire underparts grey, becoming yellowish on the belly. The upperparts are rather bright green, and the tail, which is brown, becoming light towards the tip, is widely margined on the outer web with green.

11. ***Cinnyris obscurus.**

Cyanomitra obscura (Jard.); Shelley, Birds of Africa, ii. 1900, p. 125.

Cinnyris obscurus Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 5; Bocage, Jorn. Sci. Lisboa, 1903, p. 48.

a. ♂ ad. 6. iii. 09.

This Sunbird is a common west African form, ranging from Liberia to Angola. It is plentiful on Fernando Po and also occurs in Prince's Island, where it is said by Keulemans to be confined to dense forest, and is, in consequence, seldom seen. It frequents high trees in the forest and is rarely seen near the ground.

A good account of the bird's habits on Prince's Island is given in Shelley's 'Birds of Africa' on the authority of Keulemans. It is doubtless resident in the island.

Dohrn notes that this species lives in higher regions than *C. hartlaubi*.

12. ***Zosterops ficedulina.**

Zosterops ficedulina Hartlaub, P. Z. S. 1866, p. 327; Shelley, Birds of Africa, ii. 1900, p. 185, pl. viii. fig. 1; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 5; Bocage, Jorn. Sci. Lisboa, 1903, p. 49.

a. ♀ ad. 2. iii. 09.
b. ♀ ad. 5. iii. 09.
c, d. ♂ ♀ ad. 18. iii. 09.

This White-eye is confined to Prince's Island, where it is said to frequent the hilly parts of the interior.

The specimen mentioned by Shelley (Birds of Africa, ii. p. 186) as having been obtained in "St. Thomas' Island," is said by Salvadori to be a new species, which he named *Zosterops feæ.*

13. *Speirops leucophæa.

Speirops leucophæa (Hartl.) ; Shelley, Birds of Africa, ii. 1900, p. 203, pl. viii. fig. 2.

Parinia leucophæa Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 5 ; Bocage, Jorn. Sci. Lisboa, 1903, p. 49.

a. ♂ ad. 27. ii. 09.
b–e. ♂ ♀ ad. 28. ii. 09.
f–g. ♂. 4. iii. 09.
h. ♂. 7. iii. 09.

The above series, obtained by Boyd Alexander, are in freshly moulted plumage. There appears to be no difference between the sexes either in size or in the colour of the plumage.

Dohrn has the following notes on the nidification of this species:—"The nest, composed of fine grasses and attached to two branches with the silk of moths, is comparatively small, no more than 3·6 inches in diameter and 2·4 inches in depth. The birds hatch in June and July ; the eggs are two in number and white in colour." Dohrn remarks that the birds live in small flocks in restricted localities.

Speirops leucophæa was originally described by Hartlaub (Orn. W. Afr. p. 71) from a bird in the Verreaux collection, said to have been obtained in Gaboon by Du Chaillu.

It seems doubtful if Gaboon is the correct locality from which the original specimen was obtained, and Count Salvadori considers that the bird is probably confined to Prince's Island and is not found in Gaboon.

Shelley could not discover any further evidence of this species having been obtained in Gaboon, and he also considered the bird to be found only on Prince's Island.

14. ***Cuphopterus dohrni.**

Cuphopterus dohrni Hartlaub, P. Z. S. 1866, p. 326, pl. xxxiv.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 4; Bocage, Jorn. Sci. Lisboa, 1903, p. 48.

a–c.	♂ ♀ ad.	28. ii. 09.
d–e.	♂ ♀ ad.	4. iii. 09.
f.	♀ ad.	5. iii. 09.
g.	♀ ad.	19. iii. 09.

Alexander obtained a series of beautiful skins of this Wood-Shrike, but he unfortunately has no field-notes referring to this bird. Dohrn, who was the original discoverer of this species, notes that "They build their nests in the beginning of June among bushes, about four to eight feet above the ground . . . . about 4 inches in diameter and 2·75 inches deep. The female lays two eggs, dirty white, spotted with brown. The song is like that of *Sylvia cinerea* but louder and somewhat sharper."

The sexes are alike.

Cuphopterus dohrni is also said to occur in Gaboon, but there seems to be considerable doubt whether this is actually the case. In the British Museum there is an adult bird (*ex* Verreaux Collection) labelled "Afrique occidentale (Gabon)." Another example in the British Museum which is apparently referable to this species, is a very badly preserved skin said to have been obtained at Eloby, Gaboon (*ex coll.* H. Ansell).

Personally I suspect that *C. dohrni* will be found to inhabit Prince's Island only.

15. **Turdus xanthorhynchus †.**

Turdus xanthorhynchus Salvadori, Boll. Mus. Torino, No. 414, 1901, p. 2; Orn. Golfo d. Guinea, i. 1903, p. 6; Bocage, Jorn. Sci. Lisboa, 1903, p. 48.

This Thrush is evidently very uncommon on Prince's

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† I have not had an opportunity of examining a specimen of this new Thrush.

Island, where it was discovered by Fea in 1901, although Dohrn had already suspected the occurrence of some member of the Turdidæ during his residence on the island.

Count Salvadori describes the bird as similar to *T. olivaceofuscus* Hartl., but smaller, with a yellow bill and pale-coloured feet, the dusky outer margins of the feathers of the belly broader, and the pre-pectoral band not all one colour but composed of feathers white in the middle and with broad dusky margins. Above dark olivaceous, nearly uniform, below white; the feathers of the throat spotted with dusky, those of the belly broadly fuscous. The under wing-coverts pale rufous.

Signor Fea noted that it was not common and seemed to be entirely confined to the western coast of the island. He only succeeded in obtaining a single adult example.

Although Count Salvadori assigns specific rank to this Thrush, it would appear to be merely an insular representative of *Turdus olivaceofuscus* which is confined to St. Thomas'. Boyd Alexander obtained five specimens of the latter in St. Thomas', but he unfortunately did not meet with the new geographical race on Prince's Island. His remarks are instructive as showing the extreme rarity of this island Thrush, and I therefore quote the following passages from the 'Diary of his Last Journey,' pp. 95, 87:—

"March 4th, Prince's Island . . . . The remaining third of the island—the ridge where my camp is now, marking its northern boundary—is the mountainous portion of the island . . . . The thickly wooded nature of the mountain raised my hopes of getting some interesting species, including *Turdus xanthorhynchus*, the Thrush obtained by Fea, but my hopes were not realised. I found wonderful forest-growth on the hill, and although I had a path cut almost to the top to facilitate my collecting work, I was not rewarded.

"March 17th. Left for West Bay, where there is another large roça. We passed through it and made our camp a mile or two to the south. I had hopes of finding here the new Thrush, *T. xanthorhynchus,* found here by Fea; but constant searching in all the likely localities proved fruitless. I cannot help thinking there must be some mistake about this bird, or otherwise it must be a very rare species."

From the above remarks it will be gathered that *Turdus o. xanthorhynchus* is a very shy and retiring bird, and, if a genuine *resident* on the island is even more locally distributed than Signor Fea imagined to be the case. I do not myself doubt that the Thrush is to be found there, although it may be many years before another example is obtained.

16. **Saxicola rubetra.**

Pratincola rubetra (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 6; Bocage, Jorn. Sci. Lisboa, 1903, p. 49.

The Stonechat has been recorded from Prince's Island by Keulemans (Nederl. Tijdschr. Dierk. iii. 1866, p. 391).

17. **Delichon urbica.**

Chelidon urbica (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 4; Bocage, Jorn. Sci. Lisboa, 1903, p. 48.

Evidently a very rare and accidental migrant.

Keulemans obtained a single example of the House-Martin on Princes's Island in January. The skin was not preserved, but Keulemans seemed perfectly certain of the correct identification. The House-Martin does not appear to migrate down the west coast south of Gaboon. In fact, the above example seems to be the only record from the Gulf of Guinea. *D. urbica* is said to be common in Senegal in winter, and I have in certain years seen numbers passing through the Canary Islands on their way north during the spring migration. They do not appear to pass through Sierra Leone according to Kelsall.

18. **Cotile cincta.**

Cotyle eques Hartlaub, P. Z. S. 1866, p. 325.

Cotile cincta (Bodd.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 4; Bocage, Jorn. Sc. Lisboa, 1903, p. 48.

It is quite possible that *Cotile cincta* may be found in Prince's Island throughout the year. Both Dohrn and Keulemans found it to be rare near the coast, but the latter records, on the authority of the natives, that it lives all through the year in the high mountains in the interior of the island.

The Brown-Collared Sand-Martin has an extensive range in Tropical Africa.

19. *Chrysococcyx smaragdineus.

Chrysococcyx smaragdineus (Swains.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 11; Bocage, Jorn. Sci. Lisboa, 1903, p. 47; Bannerman, Ibis, 1912, p. 244.

a. ♂ ad. 12. iii. 09.

Dohrn remarks "These birds live during the dry season (from April to September) in the southern mountainous parts." The birds are probably resident in the island throughout the year.

20. *Micropus affinis.

Cypselus affinis G. R. Gray; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 9; Bocage, Jorn. Sci. Lisboa, 1903, p. 47.

a. ♀ ad. 26. ii. 09.
b. ♂ ad. 2. iii. 09.

According to Keulemans this Swift is found all over the island, and apparently breeds in April and May.

Dohrn found it common in the neighbourhood of the town.

This Swift is also an inhabitant of St. Thomas', but does not appear to visit Fernando Po or the little island of Annobon. It has a very wide distribution in Africa.

21. Coracias garrula.

Coracias garrula Linn.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 10; Bocage, Jorn. Sci. Lisboa, 1903, p. 47.

The Common Roller has occurred in Prince's Island, where Keulemans obtained two specimens. It is probably a scarce migrant in winter.

22. Ceryle rudis.

Ceryle rudis (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 9; Bocage, Jorn. Sci. Lisboa, 1903, p. 47.

An example of the Pied Kingfisher was obtained in

Prince's Island in the month of March 1887, on the Papagaio River, and is recorded by Sousa in the Jorn. Sci. Lisboa, 1887, p. 42, as having been obtained by Newton. As the local name of the Kingfisher is included in his account, it would appear that the natives of Prince's Island are familiar with the bird and that the above recorded specimen can hardly have been a stray migrant.

Neither Dohrn, Keulemans, Fea, nor Alexander appear to have seen any signs of another example. It has probably ceased to exist as a resident on the island.

23. ***Corythornis galerita.**

Alcedo cæruleocephala Gmel.; Dohrn, P. Z. S. 1866, p. 325.

Corythornis galerita (P. L. S. Müll.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 9.

Corythornis cæruleocephala Bocage, Jorn. Sci. Lisboa, 1903, p. 47.

a–d. ♂ ♀ ad. 28. ii. 09.
e. ♂ ad. 2. iii. 09.
f. ♂ ad. 11. iii. 09.
g. ♂ ad. 12. iii. 09.

A specimen in the British Museum from Loanda does not appear to differ in any way from examples from Prince's Island.

A few notes on the habits of this little Kingfisher are supplied by Dohrn, who says that it is common on the shore, but on a few occasions single birds were seen flying about in the interior of the island. He remarks that it is a lively species. Keulemans found it common in the large river near the town of San Antonio, and noted that its food consisted of fishes and water-insects.

24. ***Halcyon dryas.**

Halcyon dryas Hartl.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 10; Bocage, Jorn. Sci. Lisboa, 1903, p. 47.

a–c. ♂ ♀ ad. et imm. 26. ii. 09.
d–f. ♂ ♀ ad. 27. ii. 09.
g. ♂ ad. 28. ii. 09.
h–i. ♂ ♀ ad. et imm. 2. iii. 09.
k. ♂. 15. iii. 09.

Halcyon dryas is found on all the islands in the Gulf of Guinea, with the exception of Annobon. On the mainland the Wood-Kingfisher appears to be confined to Gaboon.

In Prince's Island it is a plentiful species, living in the woods in the neighbourhood of streams.

25. ***Psittacus erithacus princeps.**

Psittacus princeps Alexander, Bull. B. O. C. xxiii. 1909, p. 74; Alexander, 'Boyd Alexander's Last Journey,' 1912, pp. 92–93.

Psittacus erithacus Linn.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 10; Bocage, Jorn. Sci. Lisboa, 1903, p. 46.

a, b. ♀ ad.	28. ii. 09.	
c. ♂ ad.	29. ii. 09.	
d. ♂.	1. iii. 09.	Type of the species. (Breeding.)
e. ♀ ad.	4. iii. 09.	
f. ? ♂ ad.	5. iii. 09.	
g, h. ♂ ♀ ad.	8. iii. 09.	
i. ♀ ad.	11. iii. 09.	
k. ♂ ad.	13. iii. 09.	
l. ♀ juv.	18. iii. 09.	
m. ♂ ad.	20. iii. 09 (breeding).	Shot out of a pair.

A description of this Parrot appeared in the Bulletin of the B. O. C. where it is characterised as follows:—"*Adult male and female.* Similar to *P. erithacus* Linn., but larger and darker. Entire upper- and underparts very dark grey, almost blackish; feathers, especially of the underparts, edged with dark blue, giving the bird, when viewed in certain lights, the appearance of being strongly washed with inky blue."

Boyd Alexander's original remarks in his diary concerning this Parrot may be of interest. He writes:—"If nothing has been done since Salvadori's paper published in 1903, this is a new Parrot. It is a remarkable bird, and is quite distinct from *P. erithacus.* It is very much darker, both on the upper and lower parts, the feathers, especially of the latter, edged with dark blue, which give to the body, when viewed in certain lights, the appearance of being strongly washed with inky blue." The only notes on the soft parts refer to the eye, which in the adult is "yellow" or "pale orange-yellow," and in the juvenile specimen "grey." Alexander's further notes on this species have already been published in the book written by his brother, Mr. Herbert Alexander, entitled 'Boyd Alexander's Last Journey,' from which I have culled the following:—" . . . . The bird which this island is most noted for is the Grey Parrot. Though still fairly numerous, this bird has no doubt decreased, owing to the forest land being gradually converted into cocoa-plantations, and the planters shoot a good many for eating. Keulemans, in his time out here (1865), reckoned them in thousands. . . . in its habits and manner of flight, etc., one would put it down to the West African species (*Psittacus erithacus*), and that is how I think it has escaped the attention of former naturalists who have visited this island."

In the original description of this Parrot the measurements are given as,

"*Male.* Wing, 235–238 mm.; tail, 100–114.

Female. Wing, 230–235 mm.; tail, 105."

This is obviously incorrect, as the bird is stated to be *larger* than *P. erithacus erithacus,* of which the wing-measurement of specimens in the British Museum from the the Gold Coast, Gaboon, Angola, and Uganda vary from 233–256 mm.

I have therefore carefully measured every specimen of *P. e. princeps* which Alexander obtained, and the correct wing-measurements are as follows:—

6 adult males, 240–253 mm.; average, 244 mm.

5 adult females, 225–250 mm.; average, 234 mm.

(The type-specimen [No. 10, ♂, 1. iii. 09] has the wing measuring 240 mm.)

It will be seen, therefore, that the Prince's Island birds, although probably on an average larger than the birds from the neighbouring coast, are equalled and even surpassed in the length of the wing by examples from Uganda.

I have "kept up" this subspecies as I consider that it is generally darker throughout than *P. e. erithacus*, but it must be remembered that birds from the mainland often exhibit considerable variation in this respect. It will probably be found that there are several races of this Parrot in Africa, and, indeed, Dr. Hartert has already separated the bird from the Congo which he has named *P. e. megarhynchus* (*vide* Kat. Senckenb. Mus. 1891, p. 157), on account of its large bill.

P. erithacus timneh Fraser, from Sierra Leone and Liberia, seems to be a perfectly distinct form, but I have not sufficient material to enable me to review the geographical races of the Grey Parrot which quite possibly exist.

I cannot separate birds from Fernando Po from specimens from Prince's Island.

26. Agapornis pullaria.

Agapornis pullaria (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 11; Bocage, Jorn. Sci. Lisboa, 1903, p. 46.

Keulemans occasionally found small flocks of these parrots in the most deserted parts of the island, but says that they are rare and very shy. Dohrn, in his paper, notes that the species is said to occur on the island, but that he never observed it himself. This is the common "Love-bird" of the West Coast, and has a wide distribution in Tropical Africa. It is an inhabitant of both Fernando Po and St. Thomas' in the Gulf of Guinea.

It would appear doubtful whether it is still found on Prince's Island as none of the recent collectors have obtained it. As it is a very favourite cage bird it is, doubtless, often imported.

27. Phaëthon lepturus.

Phaëthon æthereus Linn.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 15.

Phaëthon candidus Temm.; Bocage, Jorn. Sci. Lisboa, 1903, p. 52.

Alexander evidently did not meet with the Tropic-bird on Prince's Island. Keulemans notes that it is "sometimes seen." Dohrn saw this bird a few times flying about the coast of the island.

Count Salvadori is not sure that the species of Tropic-bird recorded from Prince's Island has been correctly determined, and thinks that it may prove to be *P. candidus* (=*P. lepturus* Daud.), to which form it was doubtfully referred by Keulemans.

I have not any specimens from Prince's Island, but Boyd Alexander obtained four Tropic-birds from the Ilha das Cabras (off St. Thomas' Island) which prove to be *P. lepturus,* and there are two examples in the British Museum from the same locality belonging to this species.

We may therefore safely assume that it was *Phaëthon lepturus* which Dohrn and Keulemans saw in the neighbourhood of Prince's Island, and not *P. æthereus.* Apparently it has never yet been recorded as breeding anywhere on Prince's Island.

While dealing with this species it may be as well to remark that *Phaëthon lepturus* has, in adult specimens, the entire plumage washed with pale salmon-colour. Although this salmon-tint is not nearly so strong as the apricot tinge in freshly killed examples of *P. fulvus*, yet it is very striking, and the general colour of the plumage of *P. lepturus* is therefore not always "pure white," which is the character given for this species in the key on p. 451 of the 'Catalogue of Birds,' vol. xxvi.

The four skins obtained by Boyd Alexander in 1909 have now lost very little of their beautiful pink colouring.

28. Sula sula.

Sula leucogastra (Bodd.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 15; Bocage, Jorn. Sci. Lisboa, 1903, p. 52.

The Booby has been mentioned by most writers on Prince's Island. Dohrn wrote that it was common on the west coast of the island, and Keulemans makes the same remark, adding that the Booby nests from December to January, on rocks.

29. Phœnicopterus minor.

Phœniconaias minor (Geoffr.) ; Salvadori, Orn. Golfo d. Guinea, i, 1903, p. 15 ; Bocage, Jorn. Sci. Lisboa, 1903, p. 52.

Count Salvadori has the following note on this species supplied by Signor Fea :—

"I am told that it is not rare, and that bands of it are seen occupying the 'ribeiras' in detachments for the purpose of catching small fish and other aquatic organisms."

Fea obtained a single immature male of this species on Prince's Island. It does not appear to have been recorded previously. Alexander did not meet with it. It is probably a migrant to the island.

30. Lampribis olivacea.

Ibis olivacea Du Bus, Bull. Acad. Roy. Sci. Belg. 1837, p. 105, pl. iv. ; id. Esquisses Ornithologiques, 1845, p. 5, pl. iii. ; Salvadori, Ibis, 1903, p. 178.

Lampribis olivacea Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 13.

Geronticus olivaceus Bocage, Jorn. Acad. Sci. Lisboa, 1903, p. 51.

In the Bulletin of the Belgian Academy for 1837 Du Bus described and figured an Ibis which he named *Ibis olivacea*, said to inhabit "la côte de Guinée." A second figure of this bird appeared on plate iii. in Du Bus's 'Esquisses Ornithologiques.' These two figures obviously represent the same species, although it will be noticed that in the original plate in the Bulletin the bare skin round the eye is correctly coloured black, while in the figure in the 'Esquisses' the same patch of bare skin is coloured red.

In 1877, Elliot, reviewing the subfamily *Ibidinæ* (P.Z.S. 1877, p. 477, pl. li.) figured * and described a bird from

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* The only fault which I have to find with this figure is that the feathers of the crown are not clearly shown. The bird has a long crest, the upper feathers of which are uniform in colour, of a deep glossy green, while the under-feathers have wide buff-coloured shaft-streaks. This is not shown in the plate.

Denkera in Capt. Shelley's collection, and now in the British Museum, which he referred to *Ibis olivacea* Du Bus, and for which he proposed the new generic name *Lampribis*. Unfortunately, Mr. Elliot did not notice the striking differences between his bird and *Ibis olivacea* of Du Bus, which had already been twice figured.

Messrs. Rothschild, Hartert, and Kleinschmidt, in the Nov. Zool. iv. p. 377, called attention to the difference between the figure of so-called *Lampribis olivacea* in Elliot's paper and the two birds figured by Du Bus. They pointed out that the bird figured in the P. Z. S. from Denkera (collected by Ussher) could not possibly be referred to Du Bus's description and plate of *Ibis olivacea*, and therefore proposed for it the name *Lampribis rara*. In this they were perfectly justified, and they expressed the opinion that "It is probable that Du Bus's bird is nothing more than an old *Hagedashia hagedash*, or a closely allied species not yet known to us except by the type."

A close examination of the specimens in the British Museum tends to prove that *Ibis olivacea* Du Bus is a perfectly good species. It certainly is not *H. hagedash*, which fact has already been pointed out by Count Salvadori, for this species *never* attains the long flowing crest so clearly depicted in both the plates of *Ibis olivacea* which Du Bus published. The latter part, therefore, of Messrs. Rothschild, Hartert, and Kleinschmidt's supposition appears to be more correct, for there is in the National Collection a single specimen of a bird which very closely resembles *Ibis olivacea* as figured by Du Bus. This was obtained by Mr. G. L. Bates at Efulen, Kamerun, on the 19th of May, 1903, and if I am correct in my supposition, is the only example of *Lampribis olivacea* in the British Museum.

This example, which does not appear to be adult, has the upper parts, including the wings, similar to *L. rara*, but the tail and rump are glossed with purplish-blue instead of with green. The feathers of the neck are brown, including the long crest-feathers, which are slightly glossed with green, and the entire underparts are dull olive-green very slightly glossed. I consider the figure given by Du Bus is a very fair representation of the bird. It is, however, a small specimen, the wing measuring 290 mm. and the bill only 89 mm. The sex of this specimen was not ascertained.

In 'The Ibis,' 1903, pp. 178–188, Count Salvadori has written a clear account of what he considers to be the correct status of *Ibis olivacea* of Du Bus. He is of opinion that *Ibis olivacea* Du Bus and *Lampribis rara* of Rothschild, Hartert, and Kleinschmidt, are synonymous, and in fact that the latter species is founded on the young of the former. I have formed an exactly opposite opinion, and I should like to state my reason for disagreeing with this conclusion. Count Salvadori attaches much importance to the fact that Cassin (Pr. Ac. Philad. 1857, p. 39, 1859, p. 174) identified specimens sent to him from the Rivers Muni and Camma as the young of *Ibis olivacea*, and he adds in his description, "A young bird, but evidently of this species . . . . (*I. olivacea*). General colours as figured by Baron Du Bus, but with the feathers of the neck and breast having large central spots of dark fulvous, with which also a few of the feathers of the crest are striped longitudinally"; and again, in 1859, Cassin wrote, "Several specimens from the Camma and formerly from the Moonda. The adult of this species is described and figured very accurately by the Baron Du Bus. Young ♂. General colours as in the adult, but paler. Under parts of the body with large oval spots of dull yellowish."

Count Salvadori remarks that "as Cassin was able from his specimens to judge of the great accuracy of Du Bus's description and figure, we may assume that his identification was correct."

It appears to me that the "spotted" specimens sent to Cassin were undoubtedly examples of *Lampribis rara*—whether adult or immature is quite immaterial, as both the young and adult of *L. rara* have spotted breasts,—and that Cassin wrongly identified his birds as *I. olivacea*. The possibility of *I. olivacea* assuming a spotted plumage *in the winter* occurred to me, but this is evidently not the case, as in the British Museum there are two adult birds in the spotted plumage from Denkera, five from Kamerun, and one from the upper Congo, collected in July, August, Sept., Nov., Dec., Jan., and March.

Count Salvadori is therefore evidently mistaken in thinking that *Ibis olivacea* and *Lampribis rara* are synonymous.

Dr. Sharpe (Cat. of Birds, xxvi. p. 38) has fallen into the error of giving a description of *Lampribis rara* under the heading of *Lampribis olivacea*! when in reality he was dealing with a perfectly distinct species. Later, on p. 266 of the same volume of the Catalogue, Sharpe attempts to correct his original statement, and concurs with the opinion expressed by Messrs. Rothschild, Hartert, and Kleinschmidt that *Ibis olivacea* Du Bus is in reality synonymous with *Hagedashia hagedash*. For this reason, in the 'Handlist of Birds,' vol. i. p. 187, Sharpe accepts the name *Lampribis rara* for the Prince's Island bird.

Dr. Reichenow (Vögel Afrikas, i. p. 328) adds to the confusion already caused by including the St. Thomas' and Prince's Island bird under *Theristicus rarus*, and (p. 826) by making *Ibis olivacea* Du Bus a synonym of *Theristicus hagedash*.

Thanks to Dr. R. Gestro, I have been able to examine the specimen in the Museum at Genoa, obtained by Leonardo Fea in Prince's Island in 1901. This bird almost exactly resembles the plate of *I. olivacea* given by Du Bus in the 'Esquisses.' The bill is much shorter and heavier than in *Lampribis rara*.

The two species must stand as follows :—

Lampribis olivacea (Du Bus).
(Type locality—"La côte de Guinée.")

Range. Prince's Island, St. Thomas' Island, the coast of Guinea, Kamerun.

Lampribis rara Roths., Hartert, and Kleinschmidt.
(Type locality—Denkera, Ashanti.)

Range. Ashanti, Kamerun, Upper Congo.

The following notes on the rare Ibis of Prince's Island have been supplied. Dohrn procured specimens on the island, and said that it frequented the almost inaccessible rocky and wooded localities of the southern district.

Keulemans remarks that this handsome bird occurs only on the southern and western part of the island, seldom coming near towns. It frequents trees, and rests in the afternoon, but may be seen at other times wheeling round in company with Parrots and Herons. It has a cry like that of a Crow, and is very shy, hiding when frightened. Keulemans knew nothing about its breeding-season on Prince's Island, but was told that it nested in January.

Signor Fea obtained a single example at the Roça Infante D. Henrique, on the 26th of January, 1901.

Boyd Alexander did not meet with this bird on Prince's Island. He wrote, under date March 17: "Left for West Bay, where there is another large roça . . . . Nor could we find the Wood Ibis (*G. olivaceus*). It is probably migratory."

31. *Ardea gularis.

Ardea gularis Bosc; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 13; Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

a. ♂ ad. 18. iii. 09.

This Heron is said by Dohrn to be common on the rocks of the shore, and to breed in March and April. Keulemans also met with it, but appeared to think that it bred from January to March. This species has a wide range in tropical Africa. In the Gulf of Guinea it occurs in all the four islands, including Annobon.

32. Butorides atricapilla.

Butorides atricapilla (Afzel.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 13; Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

Mentioned by Dohrn, who says that it is less common than *Ardea gularis*.

Keulemans found it more common in the interior than along the coast. It occurs up to 1500 ft. along the rivers.

It is very shy and calls during flight. In August 1865 many were seen in the western part of the island. It breeds in November and December.

This common species has a very extensive range in Africa.

33. Glareola melanoptera.

Glareola melanoptera Nordm.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 13; Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

Dohrn records a single specimen from Prince's Island. Keulemans says, "Along the shore the *Glareola* occurs rarely. Obtained one in September."

Dohrn and Keulemans visited Prince's Island together, so that the bird referred to by each author separately is probably the same specimen.

34. Numenius arquata.

Numenius arquata (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 14; Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

Dohrn states that the Curlew is not common. It lives in the swamps in the neighbourhood of the town.

35. Numenius phæopus.

Numenius phæopus (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 14; Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

Said by Keulemans to be very common along the rocky coasts, and to be still more plentiful after the rainy season. The rainy season in Prince's Island lasts from September to May, according to Alexander.

36. Totanus glottis.

Totanus glottis (Lath.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 14; Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

Dohrn remarks that the Greenshank lives in the swamps near the town and is not common.

37. Tringa hypoleuca.

Tringoides hypoleucus (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 14; Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

Dohrn mentions the Common Sandpiper with the other Waders which he says are common in the swamps close to the town. Keulemans notes that the Common Sandpiper occurs in large numbers on the shores of Prince's Island.

38. Tringa subarquata.

Ancylochilus subarquatus (Güldenst.); Salvadori, Orn. Golfo d. Guinea, i. p. 14.

Tringa subarquata Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

Dohrn found the Curlew-Sandpiper living in the marsh near the town. It is sometimes killed in June and July, besides apparently at other times of the year.

39. Sterna anæstheta.

Sterna anæstheta Scop.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 15; Bocage, Jorn. Sci. Lisboa, 1903, p. 52.

Dohrn remarks that this species is rare, and that he only observed it in West Bay and never saw it in any other part of the island. Keulemans says that it is found rarely along the coast.

40. Anous stolidus.

Anous stolidus (Linn.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 15; Bocage, Jorn. Sci. Lisboa, 1903, p. 52.

Not mentioned by Dohrn. Keulemans says that it occurs in large numbers on the south of Prince's Island and is even more numerous on St. Thomas'.

41. *Vinago calva.

Vinago calva (Temm.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 11.

Treron calva Bocage, Jorn. Sci. Lisboa, 1903, p. 50.

a–c.	♂ ♀ ad.	27. ii. 09.
d–g.	♂ ad. et imm.	28. ii. 09.
h.	♂ ad.	29. ii. 09.
i–k.	♂ ♀ ad.	2. iii. 09.

The Green Fruit-Pigeon is exceedingly common all over the island, and according to Dohrn, hatches its young in September. Curiously enough, this species is not found on the islands of St. Thomas or Annobon, in the former of which the Fruit-Pigeons are represented by the much larger bird *Vinago sanctithomæ*.

V. calva is, therefore, restricted in the Gulf of Guinea to Prince's Island and Fernando Po, but on the mainland has an extensive distribution on the West Coast.

42. ***Turturœna malherbei.**

Turturœna malherbei (Verr.); Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 11; Bocage, Jorn. Sci. Lisboa, 1903, p. 50.

a. ♂ ad. 28. ii. 09.
b. ♀. 2. iii. 09.
c–e. ♂ ♀ ad. et imm. 3. iii. 09.
f. ♂ ad. 11. iii. 09.
g. ♂ ad. 17. iii. 09.

When Salvadori wrote the twenty-first volume of the 'Catalogue of Birds,' the adult male of this Pigeon was unknown to him. He has, however, since described it in his paper cited above. A good series of this apparently rare Pigeon was procured by Boyd Alexander. The type locality of this species is given as Gaboon, but apart from the typical specimen, on the data of which no reliance can be placed, it has never again been recorded from the mainland. *T. malherbei* is a native of the islands in the Gulf of Guinea, in all of which it is found with the exception of Fernando Po, where, curiously enough, it has never been recorded. Dohrn, in his paper on the Birds of Prince's Island, says that this Pigeon is very rare. He only saw a few specimens during his stay of six months in the island, and the skins were, with one exception, spoiled by humidity and insects. Until the present series was sent home by Boyd Alexander, the species was poorly represented in the British Museum; the present set of skins is therefore of exceptional value.

The immature birds of this species have the feathers of the body minutely freckled with ochraceous brown, while in older specimens the grey feathers of the adult plumage are making their appearance.

There is considerable diversity in the colouring of the under tail-coverts, which ranges from a uniform chestnut to buff. In certain specimens these feathers are minutely freckled, while in others there is no appearance of freckling.

43. ***Haplopelia principalis.**

Peristera principalis Hartl.; Salvadori, Orn. Golfo d. Guinea, i. 1903, p. 12.

Haplopelia principalis Bocage, Jorn. Sci. Lisboa, 1903, p. 51.

a, b. ♂ ad.	27. ii. 09.
c. ♂ ad.	28. ii. 09.
d. ♀ ad.	10. iii. 09.
e. ♀ ad.	11. iii. 09.

This Dove is restricted to Prince's Island, and Boyd Alexander succeeded in procuring five examples during his visit. Count Salvadori, in his paper, writes that when he prepared the 'Catalogue of Birds' he had not seen any example from Prince's Island. Dr. Reichenow believed that *H. principalis* was identical with *H. simplex* from St. Thomas', but, as Count Salvadori points out, this idea is erroneous. I have had the advantage of comparing six specimens of *H. principalis* in the British Museum, including the series enumerated above, with a series of fourteen skins of *H. simplex*, of which twelve were collected by Alexander in St. Thomas' in January and February. A series of each species was therefore collected about the same time of year, and affords an excellent opportunity for comparison. Dr. Reichenow is undoubtedly wrong in the conclusions which he has formed, and I concur with Count Salvadori that the two forms are perfectly distinct.

H. principalis has the upper parts much browner, while the sides of the neck are more vinaceous than in *H. simplex*, which has the upper parts much bluer, particularly on the mantle. The difference is even more striking on the under surface, *H. principalis* having the entire breast, belly, and flanks pinkish vinaceous, while in *H. simplex* the underparts are bluish grey with a faint purplish wash. Both species have the middle of the belly white.

The only note which Alexander has made on this bird is that it was numerous amongst the cocoa plantations.

Count Salvadori (Orn. Golfo d. Guinea, i. 1903, p. 16) gives a list at the end of his paper of doubtful or erroneously identified species from Prince's Island.

These include a species of *Lanius, Sylvia,* and *Motacilla* ; also *Cinnyris splendidus* (Shaw), *Chalcomitra senegalensis* (Linn.), *Lamprotornis ænea* (Gm.), and *Melanobucco vieilloti* (Leach); he does not consider that any of these should be included as having occurred on the island.

Dohrn also did not believe that any of the last four species mentioned had ever been met with on the island. They were originally included as having occurred on Prince's Island on the authority of Erman, whom Dohrn proves to be quite unreliable.

Dohrn also remarks that he is certain *Neophron pileatus* Burch. does not occur on Prince's Island. It was included on the authority of Lopez de Lima, who never personally visited the island.

Neophron pileatus is a South African species, but it is very likely that *Neophron monachus* occasionally wanders to the islands in the Gulf of Guinea. An inexperienced observer might very easily mistake one for the other.

XXXIX.—*The Gannetry at "The Stack," Orkney Islands.*

By J. H. Gurney, F.Z.S.

(Plate XXVI.)

Situated nearly forty miles to the west of the Orkneys are two small islands, known collectively to seafaring men as Stack and Skerry, of which the former, where the Gannets are, is about 130 feet in height and covers six acres. Here these birds are supposed to have bred from time immemorial, which most probably they have done, for the Gannet is a very conservative bird.

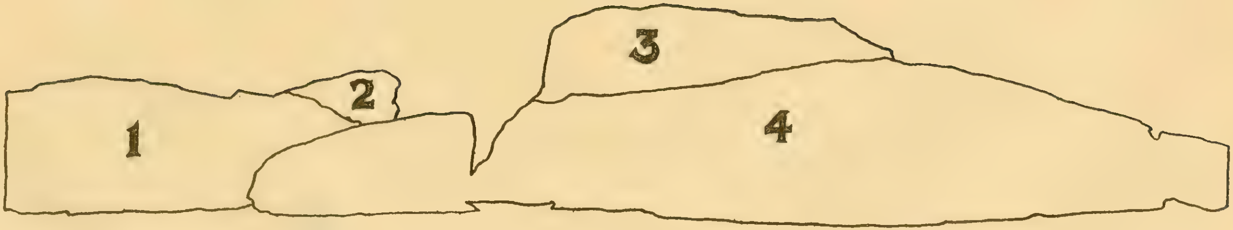
Unfortunately, we know but little of the early history of the Stack, that useful writer Donald Munro, who travelled among the Hebrides as a minister in 1549, omitting to include it in his list of Scottish islands. A bare mention of it by Sir Robert Sibbald in 1710 alone proves to the naturalist that Gannets bred there then. In his 'History of the Sheriffdoms of Fife and Kinross,' this author, who was president of the Edinburgh College of Physicians, says (p. 47):—

"They are misinformed, who write that these Fowls [Solan Geese] are found nowhere else in *Scotland* but in the Bass; for they are found in several of the West Isles, particularly in the Isle *Ailsa*, in the Firth of *Clyde*, and in the desert isles, adjacent to Hirta, called St. Kilda's Isle, and in a desert isle belonging to Orkney, and divers others."

The "isle belonging to Orkney" here mentioned can surely have been no other than the Stack, though not actually known to Sibbald by its proper name.

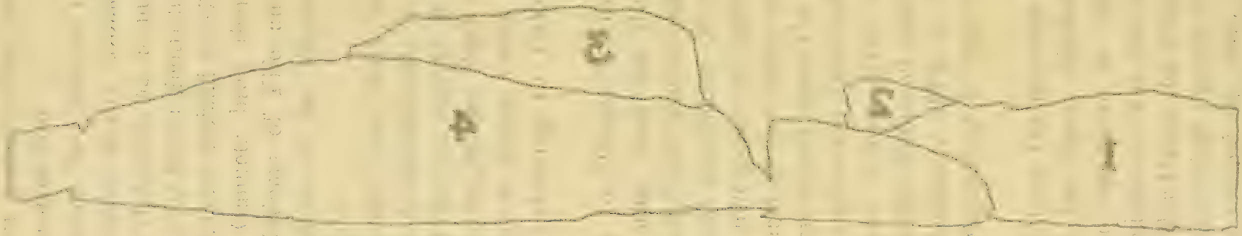
As regards the Gannet population of the Stack, there has been a very wide divergence of opinion. Years ago Captain Samuel McDonald of the fishery cruiser 'Vigilant,' who had probably never landed upon the Stack, although he may have been well acquainted with it at a distance, and who seems to have been a man given to exaggeration, assessed its strength at fifty thousand (*see* 'Report on the Herring-Fisheries of Scotland,' 1878, p. 171), but that it ever attained to such proportions is improbable in the last degree.

As all we have heard about the numbers of the Gannets at the Stack hitherto has been decidedly vague—even Professor Newton, who was there in 1890, not trusting himself to anything definite—it was with satisfaction that the writer learnt that Her Grace the Duchess of Bedford had paid three visits to the Stack during the past summer, viz., on May 17, June 19 and 22, 1914, for the express purpose of making observations on the Gannets.



1. LARGELY IMMATURE GANNETS.
2. GANNETS' NESTS.
3. GANNETS' NESTS.
4. KITTIWAKES' NESTS.

EAST SIDE OF THE STACK.



MENPES PRESS, WATFORD.

A dead calm is required for landing on the Stack, and, although the weather was very fine, and the Duchess of Bedford's yacht was able to go so close as to be within little more than a ship's length, the chief officer decided that there was too much swell to risk going ashore.

Several good photographs were taken by the Duchess, which have since appeared in 'The Scottish Naturalist' (1914, p. 176, plates i.–vi.) in illustration of an article upon Scottish Islands. The one here selected for reproduction (Plate XXVI.) was taken on the east side and, with a magnifying glass, crowds of Gannets can be seen upon it, particularly on the northern half. It is only, I learn, on that half of the island, and only upon that portion of it (No. 3) which is above the dark line that Gannets nest, but they also nest upon the highest point (No. 2) of the southern half.

On May 17 the number of Gannets actually on the Stack was not very large, but nesting-operations were not yet in full swing, and numbers of them which probably belonged to this settlement were observed by the Duchess collecting seaweed and other materials several miles away.

But on June 19 the scene was quite different, the Gannets had returned, and the bulk of them appeared to be then at home. After careful consideration the Duchess now formed an opinion that 5000 would be a fair estimate of the Stack Gannetry—at any rate, she considers the estimate of 8000 given in 'The Gannet, A Bird with a History' (p. 325), to be too high.

The Duchess has informed me that both the great rocks into which the Stack is divided, and which form two islands separated by a narrow channel, were crowded with Gannets on the arrival of the yacht. This was on June 19, but she particularly remarked that no nests were to be seen on the smaller island, excepting a few at the extreme point.

On the smaller island, it was noticed that at least one in six of the Gannets was immature—not all young birds of twelve months, but birds of the age of two years, or nearly so, which still retained some black plumage. On the larger island, on the other hand, the proportion of immature Gannets was much smaller. As regards the over-estimation of the Gannets on the Stack in the past, she is of opinion that it has been largely due to the vast quantities of other sea-fowl scattered amongst them. There are thousands of Guillemots and Kittiwake Gulls on the Stack, and, taken altogether, they probably confused Captain McDonald's eye at a distance.

The Duchess had been asked to obtain, if possible, whilst on her cruise, some confirmation of the nesting of Gannets on North Rona. This was reported to Mr. John Swinburne to have been the case when he was there in 1883 (*see* Proc. R. Phys. Soc. Edinburgh, viii. p. 65). The Duchess, however, could learn nothing authentic about it, but she does not consider the Rona cliffs adapted to Gannets, and the report may have originated in error. Yet their propinquity to Sulisgeir, where there are supposed to be 8000 Gannets (*see* 'The Gannet,' p. 325), makes it probable that Gannets have occasionally bred there.

XL.—*Notices of recent Ornithological Publications.*

Aiken and Warren on the Birds of Colorado.

[The Birds of El Paso County, Colorado. By Charles E. H. Aiken and Edward R. Warren. Colorado College Publ. Sci. Ser. vol. xii. 1914, pp. 455–603, 24 plates.]

The pleasant town of Colorado Springs, lying at the eastern base of the Rocky Mountains and overshadowed by Pike's Peak, which reaches an elevation of over 14,000 feet, is the chief town of El Paso County in the State of Colorado. Mr. Aiken has resided in the town more or less continuously since it was founded in 1871, and all his leisure time has been devoted to observing and collecting the birds of this region. The junior author, Mr. Warren, came to Colorado Springs in 1881, and has interested himself in both Mammals and Birds, and in 1910 published an excellent manual of the Mammals of the State.

The joint authors are therefore in every way fully qualified for their task in preparing a list of the birds of El Paso

County. About 275 species are enumerated, each with notes on the status, habits, and history. Twenty-four plates, prepared from photographs by Mr. Warren, illustrate the text, which is prefaced by an introduction containing an account of the topography, life-zones, climate, ornithological history, and bibliography of the county.

Bangs and Phillips on Yunnan Birds.

[Notes on a Collection of Birds from Yunnan. By Outram Bangs and John C. Phillips. Bull. Mus. Comp. Zoöl. Harvard Coll. vol. lviii. 1914, pp. 267-302.]

This paper contains a list of a large collection of over 1300 bird-skins made by a Japanese collector in southern Yunnan and acquired by the Museum of Comparative Zoölogy at Cambridge, Mass. The collection was formed almost entirely in the neighbourhood of Mengtze, a considerable town now nearly reached by the railway. It stands at an elevation of almost 4500 ft., and is bordered by mountains which run up to a height of about 8000 ft., among which it appears most of the collecting was done.

The last paper on the birds of Yunnan is that published by Mr. Collingwood Ingram in 1912 (Nov. Zool. vol. xix. pp. 269–310), and to the 352 forms there catalogued Messrs. Bangs and Phillips here add seventy-eight, thirteen of which are, in their opinion, novelties. They notice that this region appears to be a favourite winter resort of many birds which breed further north, since among the collection there are several series of a species made up of two distinct subspecies—one, sometimes both, of which, judging by the dates on the labels, do not breed in the neighbourhood of Mengtze.

The new forms described are as follows :—*Arboricola rufogularis euroa, Bambusicola oleaginia, Niltava sundara denotata, Cryptolopha trivirgatus eiuncidus, Pericrocotus brevirostris ethologus, P. b. flavillaceus* (from the north-west Himalaya of India), *Alcurus striatus paulus, Spizixus canifrons ingrami, Ianthocincla lustrabilia, Pomatorhinus macclellandi odicus, P. ruficollis reconditus, Actinodura* *ramsayi yunnanensis, Enicurus guttatus bacatus, Ianthia practica.*

Bangs on new American Birds.

[The Geographic Races of the Scaled Quail. By Outram Bangs. Proc. New Engl. Zoöl. Club, iv. 1914, pp. 99–100.

A new Magpie-Jay from Western Costa Rica. Id. ibid. pp. 101–102.]

Mr. Bangs recognizes three, instead of two, races of the Scaled Partridge or Quail. These are *Callipepla squamata pallida* Brewster, from Arizona and New Mexico, and *C. s. castanogastris* Brewster, from the lower part of the valley of the Rio Grande in Texas and the neighbouring parts of Mexico, while the type-form *C. s. squamata* (Vig.) is restricted to the Valley of Mexico.

In the second note, Mr. Bangs separates the Magpie-Jay of Costa Rica from that of southern Mexico and Guatemala under the new subspecific title of *Calocitta formosa pompata.*

Beebe on the Pheasants and on other Birds.

[Notes on the Ontogeny of the White Ibis. By C. William Beebe.

Specialization of Tail-down in Ducks. By C. William Beebe and L. S. Crandall.

Effect of Postponed Moult in certain Passerine Birds. By C. William Beebe.

Preliminary Pheasant Studies. By C. William Beebe. Zoologica, New York, vol. i. 1914, nos. 12-15, pp. 241–285.]

As is well known to most of our readers, Mr. Beebe, who is the Curator of Birds at the Zoological Park in New York, is engaged in the preparation of comprehensive work on the Pheasant family, and now, under the last of the titles in the list given above, he presents to us some of his preliminary studies. It has always been a difficult matter to draw up a satisfactory classification of the Pheasant family, but Mr. Beebe has discovered a character which he believes to be a fundamental one and by which he is confident he can divide this large family into four groups. This character is the method of the moult of the tail.

In *Perdix* and other genera (such as *Caccabis*, *Francolinus*, and *Coturnix*), as well as in *Ithaginis* and *Tragopan*, the moult of the tail begins with the central rectrices and proceeds regularly outward. In *Phasianus* and the allied genera, including *Gallus*, the moult commences with the outer pair of tail-feathers and proceeds inwards, the central pair being the last to be shed. A third subfamily, termed by Mr. Beebe Argusianinæ, includes the genera *Argusianus, Polyplectron, Chalcurus,* and *Rheinardius*; in these the moult begins with the third pair from the centre and proceeds outwards and inwards, the last to fall being the outer pair. Finally, the Peacocks form a fourth group, in which the fifth pair fall first and the first last.

The sequence can be best shown as follows, the numbers referring to the pairs of feathers numbered from the centre outwards :—

Perdicinæ	1 . 2 . 3 . 4 . 5 . 6
Phasianinæ......	6 . 5 . 4 . 3 . 2 . 1
Argusianinæ ...	3 . 4 . 2 . 5 . 1 . 6
Pavoninæ	5 . 4 . 3 . 2 . 6 . 1

The rest of the article on the Pheasants deals with the plumage-sequence of *Ithaginis, Tragopan, Lobiophasis,* and with a review of distinguishable forms of some of the other genera, such as *Lophophorus* and *Crossoptilon*; and in these matters Mr. Beebe adopts a decidedly conservative policy, only recognizing those subspecies which can be clearly discriminated, and suggesting that in many cases anomalous and puzzling forms can be explained by hybridization.

Of the three other papers on the list, the first deals with the development of the plumage and the changes in the colour and shape of the bill and legs of the White Ibis (*Guara alba*) from the time of hatching onwards, and is the result of observations made on these birds in the aviaries of the Zoological Park. It is illustrated by a coloured plate.

In another paper the growth of the rectrices in the Wood-Duck is shown to start as early as the tenth day after hatching, while none of the contour-feathers begin to appear till at least four days later. The down-feathers, which precede the rectrices, were found to be remarkably long and stiff, and are borne on the tip of the latter for a considerable period.

The third paper relates a curious experiment made by Mr. Beebe on the Scarlet Tanager (*Piranga erythromelas*) and the Bobolink (*Dolichonyx oryzivorus*); both of these birds have a brilliant summer dress, which is exchanged in autumn for a duller and more sombre garb resembling that of the female.

Taking some of these birds in their full summer dress and confining them in rather small cages, Mr. Beebe gradually cut off the supply of light and increased the amount of food. By this means the birds became very fat, and, although they appeared to be in perfect condition in every respect, no signs of moulting took place, and the birds retained their bright breeding plumage through the whole winter. In the early spring the Tanagers and Bobolinks were brought back under normal conditions and into seasonal activities, with the result that a moult took place, and the succeeding plumage was not the winter one but a new nuptial plumage, so that in this case the winter plumage was entirely suppressed.

Experiments such as these open out large fields of speculation, and will no doubt in time help to solve some of the riddles of variation and mutation.

Chapman on new Birds from Ecuador.

[Descriptions of new Birds from Ecuador. By Frank M. Chapman. Bull. Amer. Mus. Nat. Hist. vol. xxxiii. 1914, pp. 317–322.]

The American Museum is now extending its ornithological survey of South America into Ecuador, where for some time past Mr. William B. Richardson has been collecting in certain selected localities. Pending a detailed report on the very large collections sent to New York, Mr. Chapman has now published descriptions of new species and subspecies of the following genera:—*Leptoptila*, *Speotyto*, *Pyrrhura*, *Tityra*, and *Pitylus*.

E. C. Chubb on South African Birds' Eggs.

[A Descriptive List of the Millar Collection of South African Birds' Eggs. By E. C. Chubb. Annals Durban Museum, i. 1914, pp. 29–106, pl. vii.]

The energetic Curator of the Durban Museum has been able to start a new journal, under the title given above, to contain memoirs on the zoological and other material contained in the Museum; and his contribution to the first issued part is a catalogue of the very valuable collection of eggs made by our late Colonial Member, Mr. A. D. Millar, which has been acquired for the Museum.

The collection contains some 2500 eggs, representing 308 species, a number of which have not hitherto been described, though many were made use of by Messrs. Stark and Sclater in their work on South African Birds.

The majority of the eggs were collected by Mr. Millar himself, mostly in the neighbourhood of Durban. In many cases, there are added to the descriptions field-notes from Millar's diaries.

A coloured plate of some of the hitherto unfigured eggs, prepared by Mr. Grönwold, adds to the attractiveness of this very useful piece of work, on the completion of which we must offer our congratulations to Mr. Chubb.

Flower on the Giza Zoological Gardens.

[Report on the Zoological Service for the Year 1913, in which is included the 15th Annual Report on the Giza Zoological Gardens. By Capt. S. S. Flower, Director. Pp. 1–48, pls. i–viii. Cairo (Govt. Press), 1914. 8vo.]

Capt. Flower's Annual Report on the Zoological Gardens near Cairo contains the usual statistics. The year 1913 proves to have been a record one, both as regards the number of visitors, 258,623, and in the number of animals in the menagerie, which amounted to 1630, representing 378 distinct forms.

Among interesting birds acquired during the year were a pair of Abu Gumba, or Ground-Hornbills (*Bucorvus abyssinicus*), and 12 Senegal Bustards (*Otis senegalensis*), all from Kordofan, and a Slender-billed Gull (*Larus gelastes*) from Lake Menzaleh.

A new Museum of Natural History is being constructed in the Gardens, and the zoological collections formerly preserved in the Egyptian Government School of Medicine at Cairo have been handed over to the care of the Zoological Service. Doubtless, Mr. Nicoll and Mr. Bonhote will be able to get together and arrange for exhibition and study a good representative collection of Egyptian birds for this new institution.

Under the fostering care of the staff of the Gardens, much progress has been made in the protection of birds and the institution of shooting licenses; and the number of Egrets, over a thousand of which were hatched and reared in captivity and liberated in 1913, have increased and multiplied all over the country—a most satisfactory piece of work.

Foster on the Birds of Hertfordshire.

[The Birds of North Hertfordshire, being Notes on the Birds of Hitchin and surrounding District of North Herts. With Tables of Dates of Arrival of Summer Migrants since the Year 1908. By Arthur H. Foster, M.B.O.U. etc. Pp. 1–32, 1 pl. Hitchin (Paternoster and Hales), 1914. 8vo.]

Mr. Foster has published his list of 192 species of birds which are known to have occurred in north Hertfordshire, in separate pamphlet form, prefaced by a photograph of a Stone-Curlew approaching its nest, from the camera of Mr. Bickerton, and a few words of introduction by the same gentleman, who has made a speciality of the birds of this county.

Among the rarer species occurring is the Stone-Curlew already mentioned, which still breeds regularly in one locality in the district. Other birds more numerous here than in any other part of the same county are the Red-backed Shrike, the Dotterel, the Hooded Crow, and the Twite.

Gurney's Bird-report for Norfolk.

[Ornithological Report for Norfolk (1913). By J. H. Gurney, F.Z.S. Zoologist, 1914, pp. 161–182, pl. ii.]

Mr. Gurney's report of all matters of ornithological interest in Norfolk has now been issued for a good many years, and always contains many observations and reflections of interest. The frontispiece is a reproduction of a clever photograph of a Sparrow-Hawk which has just received the contents of the keeper's gun, and is in the act of falling through the air ; and it is still a matter for regret that so many of our rarer and more interesting birds are sacrificed to the keeper's ignorance as to which birds really do harm to his game and which do not.

The spring migration was again lamentably deficient in the smaller Warblers—Willow-Warblers, Whitethroats, Nightingales, and Blackcaps,—and it is suggested that increasing numbers of these fall victims to the "roccoli" and other methods of destruction so common in Italy. The Spoonbills, however, still come to Breydon Broad in small numbers, and were seen on twenty-six days out of one hundred and six between May and August by the watcher Mr. G. Jary.

The autumn migration commences as early as August on the Norfolk coast, and can be roughly divided into two brigades of birds, the first consisting of Wheatears, Redstarts, Warblers, Flycatchers, and Sparrow-Hawks, reaching its maximum in September; while in October and November come hosts of Grey Crows, Rooks, Jackdaws, Skylarks, and Thrushes.

Among the rarities recorded during the year were :—Ortolan Buntings, Yellow-breasted Buntings, Roseate Terns, a Glossy Ibis, and an inrush of Waxwings in November and December.

At Blakeney Point, where there is a well-protected "turnery," the results of the breeding season were rather unsatisfactory, as there was a great mortality among the young Lesser Terns and more than three-fourths of them perished, probably owing to a deficiency in the supply of Whitebait, which appears to form the normal food of the nestlings.

Neumann on African Owls and Flycatchers.

[Ueber einige afrikanische Uhus. Von Oscar Neumann. Journ. f. Ornith. 1914, pp. 35–38.

Vermeintliche Unica des Philadelphia und des Wiener Museums, und ihre systematische Stellung. Id. ibid. pp. 156–157.]

In the first of these short notes Mr. Oscar Neumann discusses the position of an Eagle-Owl, *Bubo ascalaphus trothæ*, recently described by Dr. Reichenow from German South-West Africa. This, from an examination of the type, is found to have nothing to do with *Bubo bubo* or *Bubo b. ascalaphus*, but is close to, if not identical with, the South African form usually known as *B. maculosus.* A further point discussed is the nomenclature of this latter species. By Reichenow it is called *Bubo nisuella* (Daud.), a name founded on Levaillant's "Choucouhou"; but Levaillant's figure cannot be identified with any certainty, and has considerable resemblance to the bird generally known as *Otus capensis.* The next available name by which this Owl has been generally known is *Bubo maculosus* (Vieill.); in this case, again, our author points out that the description is quite inapplicable and that the earliest certain and undoubted description is that of Temminck (Pl. Col. ii. 1821, tab. 50) under the name of *Strix africana.* He therefore suggests that the Cape Owl, usually known as *Bubo maculatus* (Vieill.) and sometimes as *B. nisuella* (Daud.), should in future be referred to as *Bubo africanus* (Temm.).

The second note deals with two of Cassin's types, collected by Du Chaillu in West Africa, and described as *Parisoma olivascens* (afterwards made by Reichenow the type of his genus *Apatema*) and *Hypodes cinerea* (first placed by Cassin in the genus *Eopsaltria*).

The first of these our author would identify with a Flycatcher from Fantee in the British Museum, labelled "*Butalis grisola*," and also with *Bradornis sylvia* Rchw. from Kamerun. This species should be referred to the genus *Alseonax*, and the bird should be known in future as *A. olivascens* (Cass.).

With regard to *Hypodes cinerea*, Mr. Neumann believes that it is identical with Hartlaub's *Alseonax lugens* and with *Muscicapa cassini* Heine (nec Sharpe, Cat. Bds. iv. p. 156, and Reichenow, Vög. Afr. ii. p. 453), and it should also be referred to *Alseonax* and be known as *A. cinereus* (Cass.).

Finally, a third unique type now in the Vienna Museum has recently been examined by Mr. Neumann. This is *Eremomela hypoxantha* Pelz., and turns out to be no *Eremomela* at all, but the female of a Sun-bird, *Hedydipna platura* (Vieill.).

Pearl on the Egg-laying Capabilities of Poultry.

[Inheritance in Blood-lines in Breeding Animals for Performance, with Special Reference to the 200-egg Hen. By Dr. Raymond Pearl. Ann. Rep. Amer. Breeders' Assoc. vi. 1911, pp. 317–326.

The Secretory Activity of the Oviduct of the Domestic Fowl. By Raymond Pearl. Proc. Soc. Promotion Agric. Sci. 1911, pp. 29–34.

The Mode of Inheritance of Fecundity in the Domestic Fowl. By Raymond Pearl. Journ. Experimental Zool. xiii. 1912, pp. 153–268.

Fat-deposition in the Testis of the Domestic Fowl. By Raymond Pearl and Alice M. Boring. Science, xxxvi. 1912, pp. 833–835.]

Dr. Raymond Pearl, who is on the staff of the Agricultural Experiment Station of the State of Maine, U.S.A., has sent us a number of his papers, all dealing with various aspects of the fertility of the Domestic Fowl. In the first and third of those mentioned, he discusses the question of the inheritance of the egg-laying quality, which he believes is not so simple as it seems. From his numerous experiments, chiefly with Plymouth Rock and Indian Game varieties, he finds that it by no means follows that the record of the fecundity of a hen taken by itself gives a reliable indication of the probable egg-production of the daughters. He finds, however, that high fecundity may be inherited by daughters from their sire, independently of the dam, while a low degree of fertility may be inherited by daughters from either sire or dam or both.

These facts seem to be supported as such by a mass of evidence derived from experiments, and these the author proceeds to explain on a Mendelian hypothesis, for the details of which we must refer the reader to the memoir itself.

The second paper in the list gives a detailed account of the passage of the hen's egg down the oviduct, and of the exact portions of the oviduct where the egg acquires its albumen of two varieties, its shell-membrane and its shell, and of the time taken to acquire these various coverings.

The last paper deals with the origin of the fat found deposited among the interstitial cells of the testis and ovary of the fowl, and it is concluded that this is a part of the metabolized fat from the food which is carried to the testis and there directly deposited.

Ridgway's Birds of North and Middle America.

[The Birds of North and Middle America: a Descriptive Catalogue, etc. By Robert Ridgway. Part vi. (of Bulletin no. 50 of the United States National Museum). Pp. xx+882; 36 pls. Washington (Govt. Printing Office), 1914. 8vo.]

It is just two and a half years since Mr. Ridgway completed the fifth part of his monumental work on the birds of North America, and we have now received a copy of Part VI., which was issued from the press on the 8th of April last. It contains descriptions of the Picarian Birds, including the Woodpeckers, Barbets, Toucans, Puff-birds, and Jacamars; of the Anisodactylæ, including the Kingfishers, Todies, and Motmots; of the Nycticoraciæ, including the Goatsuckers; and of the Owls. The Cuckoos and Parrots have had to be excluded, and will appear in the next Part. As it is, the present volume consists of 882 pages.

For those who are not acquainted with Mr. Ridgway's work, it may be added that full descriptions, not only of each subspecies and species, but of the higher groups (genera, families, etc.), are given, and that all the species occurring in North America, from the Arctic to the Isthmus of Panama, as well as those of the West India Islands and Galapagos, are included. A series of 36 plates of the structural characters of each genus is a most useful addition and a great assistance to the working ornithologist.

Anyone who has worked at the birds of America—and, alas! the number who are now so engaged among our British ornithologists is all too few—well knows how indispensable Mr. Ridgway's volumes are, and will welcome the appearance of the present volume, and will join with us in hoping that he may be spared to complete the work.

Salvadori on a Forgotten Paper by Bonaparte.

[Intorno ad un lavoro del Principe Carlo Luciano Bonaparte. Nota del Socio T. Salvadori. Atti Accad. Sci. Torino, vol. xlix. 1914, pp. 447–451.]

In this short note Salvadori draws attention to a paper by Bonaparte, which contains a number of new generic names, and which appears to have escaped, or partially escaped, the notice of bibliographers. The title of the paper is "Parallelismo fra le tribu dei Cantori Fissirostri e quelle dei Volucri hianti et dei Nothurni orvero insidenti," and it was published in the 'Rivista Contemporanea,' vol. ix., February 1857, pp. 209–217.

The names of the new genera introduced are *Hemicecrops, Pristoptera,* and *Tapera* for certain species of Swallows; of these, the last-mentioned was previously used by Thunberg and is therefore invalid. For members of the family Cypselidæ, *Achantylops* and *Pallenia* are proposed; the first has no species assigned to it, and can therefore not be made use of under any circumstances. Finally, *Ramphaoratus* and *Capripeda* are suggested for certain members of the family Caprimulgidæ.

Stresemann on the Edible-nest-producing Swift.

[Was ist *Collocalia fuciphaga* (Thunb.)? Von Erwin Stresemann. Verhandl. Ornith. Ges. Bayern, xii. 1914, pp. 1–12.]

Mr. Stresemann has discovered, with the aid of Mr. Bartels, in Java, that there are two distinct but closely allied species of *Collocalia* existing side by side in that island. He compares this state of things with *Parus palustris* and *P. atricapillus*, *Certhia familiaris* and *C. brachydactyla*, which, though quite distinct species, are difficult to distinguish, and co-exist side by side in Europe. Such cases have been termed by Kleinschmidt "Affenformen."

Of the two species, he identifies the larger form with an unfeathered tarsus with Thunberg's description of "*Hirundo fuciphaga*," while the smaller species he believes to be identical with the bird described by Latham in his 'History of Birds,' Suppl. ii. p. 257, and which was subsequently named by Lesson *Salangana vestita*.

In the latter part of his paper he gives diagnoses of several new subspecies of the larger Javanese type-form, i.e., *Collocalia fuciphaga micans* from Sumba, Savu, and Timor, *C. f. hirundinacea* from the Snow Mountains of Dutch New Guinea, and *C. f. moluccarum* from the Kei and South-east Islands.

Schaub on the Pterylography of the Kagu.

[Das Gefieder von *Rhinochetus jubatus* und seine Postembryonale Entwicklung. Von Samuel Schaub. N. Denkschr. Schweiz. Nat. Ges. Bd. 14, Abh. 2, 1914, pp. 65–118, 1 Taf., 12 text-fig.]

The Kagu of New Caledonia has for a long time occupied an anomalous position in our classificatory system, and whether Mr. Schaub has been able to throw any further light on its exact relationships seems somewhat doubtful; but in the present number he has criticized and added to the accounts already published by Murie and Burckhardt in regard to the pterylography of this bird.

He regards the "powder-down" patches, which form so remarkable a feature of the feather-covering of the Kagu, not as a primitive, but as a highly specialized set of organs.

The second portion of the paper deals with the juvenal plumage and its development into that of the adult.

Snethlage on the Birds of the Amazon Valley.

[Catalogo das Aves Amazonicas contendo todas as especies descriptas e mencionadas até 1913. Pela Dr. Emilia Snethlage. Bol. Museu Goeldi, viii. 1914, pp. 1–532, 6 pls. & 1 map.]

The Museum at Para, in Brazil, was formerly under the Directorship of our Honorary Member, Dr. Emil A. Goeldi. Since he retired and has gone to live in Switzerland, the

Museum has been renamed after its renowned founder, and his work on Brazilian birds has been undertaken by a learned lady, Dr. Emilia Snethlage, who has already made considerable additions to our knowledge of the Avifauna of the Amazons region.

The present stout volume contains a review of all the species of birds hitherto recorded from the basin of the Amazon, extending westwards from the sea to the Andes and northwards to the water-parting of the Amazons and Orinoco.

A short description of each species is given, as well as analytical keys to the orders, genera, and species; also the exact localities of the examples in the extensive collections of the Goeldi Museum, and as far as possible the common Portuguese name.

In the introduction will be found a short list of the literature of the subject, some account of the history of ornithological exploration in northern Brazil, and notes on the limits of the region treated of. This last is well illustrated by a map. Five other plates, to explain the structural characters of birds, will assist the amateur to identify the generic position of any bird, and the whole work is designed not only for the collectors in the field in Brazil, but also for the workers in the museums of Europe and elsewhere. Unfortunately, it is written in the Portuguese language, which is not very well known; but this, we suppose, was inevitable in a work published in Brazil.

We must congratulate Miss Snethlage on having brought to a conclusion a most laborious and conscientious piece of work, and hope that it will stimulate the activities of Brazilian ornithologists to make better known the extraordinarily rich and varied avifauna of a land rendered classical by the early work of our compatriots, Bates and Wallace.

Surface on the Structure of the Hen's Oviduct.

[The Histology of the Oviduct of the Domestic Hen. By Frank M. Surface. Ann. Rep. Maine Agricult. Exper. Station for 1912, pp. 395–430, 4 pls. Orono, Maine, U.S.A.]

This paper contains a careful study of the intimate structure of the oviduct of the hen, which is of considerable importance, since at least half the mass of the normal hen's egg is elaborated by the walls of this organ during its passage along it, namely, the albumen, the shell-membrane, and the shell itself.

Mr. Surface claims that he is the first to point out the presence of certain glandular structures in the funnel region at the commencement of the oviduct, where the ovum is grasped and enters the oviduct after ovulation. It is from these glands, he believes, that the thin layer of more dense albumen, known as the chalaziferous layer, is derived.

The functions of the other portions of the oviduct have already been pointed out, but in the present paper the whole of the minute structure is described, and the parts played by each region of the oviduct, from the funnel to the vagina, in the formation of the various portions of the egg are clearly pointed out.

Tschusi on the Ornithological Literature of Styria.

[Zoologische Literatur der Steiermark. Ornithologische Literatur. Von Viktor Ritter v. Tschusi zu Schmidhoffen. 1912, 1913. Mitt. Nat. Ver. Steiermark, vol. 50. 1913, pp. 136–145.]

The title of this paper fully explains its contents. It contains a list of all ornithological papers relating to Styria, in Austria, published during the years 1912 and 1913.

British Birds.

[British Birds, edited by H. F. Witherby, F.Z.S., M.B.O.U., assisted by Rev. F. C. R. Jourdain, M.A., M.B.O.U., and Norman F. Ticehurst, M.A., F.R.C.S., M.B.O.U. Vol. vii. nos. 1–12. June 1913–May 1914.]

The contents of the seventh volume of 'British Birds' appear to be quite as varied and interesting as those of its predecessors.

Among the more interesting articles is one from Mr. G. B. Humphreys, who has discovered a breeding-place of the Roseate Tern in Ireland, the exact locality of which he wisely refuses to divulge. Miss Best and Miss Haviland contribute some wonderful photographs of the Grey Lag

Goose, the Eider, and the Common Gull, all in their nesting-haunts or on their nests, and they believe that—anyhow, in the case of the first-named—the sense of smell is so well developed that they can only be satisfactorily photographed when the wind is blowing from the bird towards the camera and hiding tent. Some equally beautiful photographs of the Red-throated Diver have been sent by Miss E. L. Turner. Mr. Witherby's article on the plumages of the Rook have already been noticed, and Messrs. Jourdain and Borrer give us an interesting account of "Erythrism in Eggs." The "Bird-ringing" scheme attracts more and more helpers every year, and the results gradually obtained, when sifted out and tabulated, cannot fail to help to solve many of the obscurer problems of bird-migration.

The Emu.

[The Emu. Official Organ of the Royal Australasian Ornithologists' Union. Vol. xiii. pts. 1–4. July 1913–April 1914.]

The thirteenth volume of 'The Emu' contains a large number of contributions of a varied nature in regard to Australian ornithology. The veteran American, Dr. R. W. Shufeldt, whose favourite study is the osteology of birds, contributes an account of the skeleton of the Honey-eater (*Acanthochæra carunculata*), illustrated with photographs taken by himself.

Among the topographical papers are those of Capt. S. A. White on the Gawler Ranges of South Australia; of Messrs. Orton and Sandland, on the birds of the neighbourhood of Moore, in West Australia; of Mr. E. D. Barnard, on the Torilla Plains of Queensland; and of Mr. H. G. Barnard, on the birds of the Brunnette Downs in Northern Territory.

Mr. C. F. Cole sends a description of a new Scrub-Wren, *Sericornis insularis*, from Forsyth Island, in Bass Strait, and Dr. W. Macgillivray finds it necessary to propose a new generic name for a parrot related to *Cyclopsittacus*, collected at Cape York, by Mr. M'Lennan. He proposes to name the bird *Pseudopsittacus maclennani*, gen. et sp. n.

The Annual Meeting of the R. A. O. U. was held at

Adelaide in November 1913, the President being Mr. R. Hall, and was most successful. It was followed by an interesting excursion up the River Murray in a special steamer chartered by Capt. White, which lasted over a week. A full report of this and of all the birds noticed during the excursion will be found in the January number.

List of other Ornithological Publications received.

Goeldi, E. A. Fort mit der Reiherfeder vom Damenhut! 'Bund,' June, 1914. Die Tierwelt der Schweiz in der Gegenwart und in der Vergangenheit. Bd. I. Wirbeltiere. Bern, 1914.
Mathews, G. M. The Birds of Australia. (Vol. iii. pt. 6, 1914.)
North, A. J. Nests and Eggs of Birds found Breeding in Australia and Tasmania. (Vol. iv. pt. 4. Sydney, 1914.)
Swarth, H. S. Distributional List of the Birds of Arizona. (Cooper Orn. Club, California, 1914.)
Watt, H. B. Scottish Heronries. (Scott. Nat., May, 1914.)
Australian Zoologist. (Vol. i. pt. 1. Sydney, 1914.)
Avicultural Magazine. (3rd Series, Vol. v. Nos. 9-11, 1914.)
Bird Lore. (Vol. xvi. Nos. 3, 4, 1914.)
British Birds. (Vol. viii. Nos. 2, 4, 1914.)
Bulletin of the Royal Australasian Ornithologists' Union. (No. 4. Melbourne, 1914.)
The Condor. (Vol. xvi. No. 4, 1914.)
The Emu. (Vol. xiv. pt. 1, 1914.)
The Feathered World. (25th Birthday Number. Vol. li. No. 1306. London, 1914.)
Field Museum of Nat. Hist. Ann. Report of the Directors for 1913. (Chicago, 1914.)
Irish Naturalist. (Vol. xxiii. Nos. 7–9, 1914.)
Messager Ornithologique. (No. 2. Moscow, 1914.)
Ornithologisches Jahrbuch. (Vol. xxv. Heft. 1, 2, 1914.)
The Scottish Naturalist. (Nos. 31–33, 1914.)
The South Australian Ornithologist. (Vol. i. pt. 3. Adelaide, 1914.)
Zoologischer Anzeiger. (Bd. xliv. Nr. 9–13, 1914.)

XLI.—*Letters, Extracts, and Notes.*

The following letters have been received :—

Sir,—The following may possibly be of sufficient interest for publication in 'The Ibis.' Naturalists who have paid some attention to the study of Psittacine birds will be familiar with the handsome Australian Broadtail known as Pennant's Parrakeet (*Platycercus elegans*), and will be aware that whereas the plumage of the adult is mainly crimson, that of the young is for the most part green, the complete mature dress not being assumed for over a year. For some time past I have been engaged in an attempt to partially acclimatise certain of the Platycercinæ, and after a number of failures succeeded this year in inducing a pair of Pennants to nest and rear their young at complete liberty. The latter, to my great surprise, have just left the nest in what is, with the exception of a few greenish feathers on the wing, the full crimson plumage of the adult, a circumstance which appears to me to be most interesting and remarkable. So far as I am aware, Pennants bred in English aviaries have not hitherto shown any abnormality of plumage, and moreover the Port Adelaide Parrakeet (*Platycercus adelaidæ*), a very near relative of the Pennant, has several times bred with me at liberty and never failed to produce young which carried their immature dress (which is very similar to that of the Pennant) for the full natural period.

It is, I believe, held by some authorities that all primitive types of birds were soberly coloured and that a showy dress is first assumed by the male, later by the female, and last of all by the young. One would naturally expect these changes to be extremely gradual, but here apparently we have an instance in which the final change is brought about quite suddenly. It would be interesting to know whether the parents of my young birds were green or red in their first plumage ; but as they were both imported from Australia when fully adult, this point cannot unfortunately be ascertained.

I am, Sir,
Yours, &c.,
TAVISTOCK.

Woburn Abbey, Woburn.
July 1st, 1914.

SIR,—Mr. Bonhote's and Dr. Ticehurst's letters in regard to my paper on the Moorhen have greatly interested me, and perhaps I may be allowed to make a short reply to some of the points raised. As regards Mr. Bonhote's letter, I freely admit I had not read his article in the 'Field' of March 24, 1906, though I have since looked it up, and I think Mr. Bonhote will agree with me that unlimited time would be required to look up every journal and newspaper to see if anything had been written on any particular subject. Mr. Bonhote's notes about the colour of the bill in winter and summer are of outstanding interest, and I should much like to see the specimens on which he came to these conclusions, as all the *full* adults I have examined or seen taken throughout the twelve months have all had red bills and red eyes, and until I have conclusive evidence to the contrary I must maintain that all Moorhens with olive bills and brown eyes are immature, and I have yet to see a wild specimen in full adult dress (no white on throat or chin, full slaty dress, and pure white flank stripes) with an olive bill.

Speaking without seeing the specimen, I should say that Mr. Bonhote's hen (March 26) was a young bird of the year before (*cf.* my notes *re* second plumage, December, January to April). His July and November notes are of the utmost interest, and I can only suppose that captivity tends to dull the colours of the soft parts in the July birds and that the November ones were possibly the young birds "bred during the season." Mr. Bonhote's wild-killed hen in November is doubtless a second plumage bird, with white throat, which had assumed the adult colouring of the bill rather earlier than appears to be normal (*cf.* notes *re* second plumage, December to April).

I think Mr. Bonhote is right in thinking the white on the first primary is variable. I agree that we are all liable to be mistaken, and if later Mr. Bonhote and Dr. Ticehurst will allow me to examine their specimens in winter dress and they prove to be adults with olive bills, I am quite prepared to be convinced that my conclusions are incorrect.

I should especially like to examine Dr. Ticehurst's specimens which he mentions as being taken on October 10 and November 18, both of which are in that state of dress, and should have the soft parts as given by me on p. 300 (second plumage). Is not his bird, taken on November 1, in adult dress?

As regards Dr. Ticehurst's letter, he might be interested to know that I showed my "flapper" Moorhens to several ornithologists, who did not recollect having actually seen specimens in that state; anyway, I have not pretended that the fact was new, but that it merely required resurrecting. I note Dr. Ticehurst agrees that the shield increases in size during the breeding-season.

At a meeting of the B. O. C. during this last session, Mr. Witherby exhibited a series of Rooks, the value of which was that they were all taken during one year, and I think that one year's series would more surely fix times of seasonable moults and plumage than odd specimens secured over a long period.

I agree with Dr. Ticehurst that "series from about the same dates of hatching" would be useful, but how to be sure that birds on the wing were all hatched on a certain date is beyond me, and after all, if chicks are hatching from May to July, they would all be moulting into the second plumage between the beginning of September and the middle of November, a period of ten weeks, which allows for about the same ratio of time as May to July;

that is to say, that it could be taken that young birds moulting in September were hatched in May, and those moulting in November were hatched at the beginning of July.

It is to be regretted that ornithologists who knew subjects "for at least a dozen years" do not put more of their knowledge in writing in some recognised scientific journal, so that the time of the student would not be taken up in writing on a subject that is "clearly known to pretty nearly everyone." Unfortunately these subjects are not "clearly known to pretty nearly everyone," and there are not a few misstatements carried over from work to work which could with more careful study and less proneness to copy be put right.

It is my idea to continue these papers, and to describe on the same lines many of the interesting sequences of plumages of our British Birds, many of which have not yet been fully gone into.

I am, Sir,
Yours, &c.,
C. H. B. Grant.

The Sports Club,
St. James' Square,
August 30th, 1914.

Sir,—Referring to the plate which illustrates my paper in the last issue of 'The Ibis' (p. 403), I desire to say that it is not an accurate reproduction of the original drawing which I was responsible for and passed for the artist. The proofs of the plate I refused to pass, but the Editor decided that they were *sufficiently* good. I disclaim, therefore, all responsibility in the matter.

I am, Sir,
Yours, &c.,
Henry O. Forbes.

Redcliffe, Beaconsfield, Bucks.
September 8th, 1914.

[We are sorry that Dr. Forbes was unable to approve of his plate. Owing to the great improvement of the mechanical processes of reproduction of coloured drawings, both by chromolithography and by the various photographic processes, it has become more and more difficult to get plates printed by lithography satisfactorily coloured by hand as was done in previous years. We have, therefore, been endeavouring to reproduce coloured plates by the new mechanical processes. In the case of Dr. Forbes's plate, the first result was admittedly unsatisfactory, and the only way in which the plate could be ready in time for publication was to have each copy touched up by hand. This was done, and to us as well as to the artist the result seemed satisfactory and an accurate representation of the original drawing. We regret that Dr. Forbes was unable to agree with us, and we hope we shall be able to satisfy him on a future occasion.]

The New Edition of the B. O. U. List of British Birds.—Members of the Union will doubtless be pleased to hear that the new List is now complete and all in type. The Committee hope that it will be ready for publication before the end of the present year.

A Correction.—On page 518 of the July number of 'The Ibis,' it is stated that the "so-called Siberian or Thick-billed form (of the Nutcracker), *Nucifraga c. macrorhynchus*, breeds as far west as East Prussia." There is some confusion in regard to this statement; the Siberian Nutcracker (*N. c. macrorhynchus*) is the Slender-billed form, and does not appear to have been recorded breeding west of Siberia, though there have been several "irruptions" of late years in autumn and winter as far west as England and France.

The European or Thick-billed Nutcracker (*N. c. caryocatactes*) is known to breed in East Prussia as well as in other parts of central Europe. I have to thank Mr. Jourdain for drawing my attention to this misstatement.—W. L. S.

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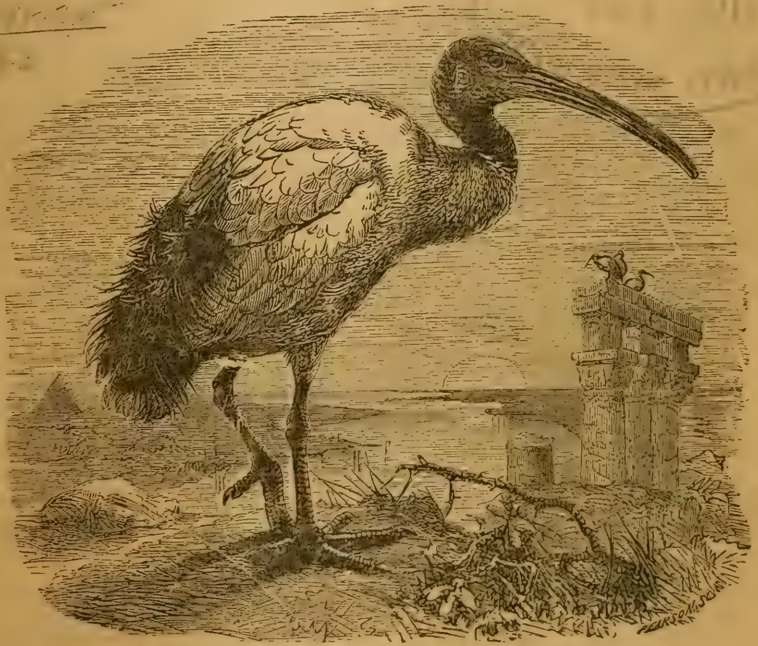

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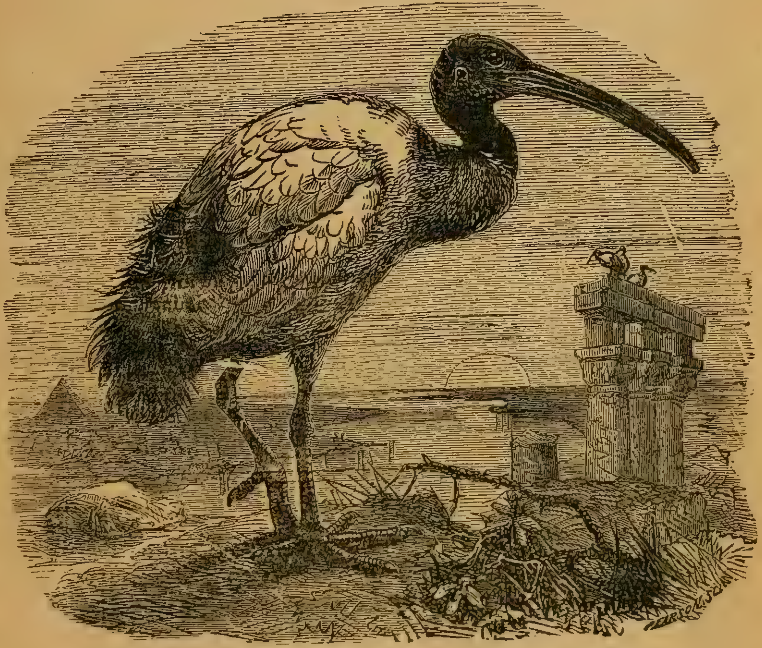

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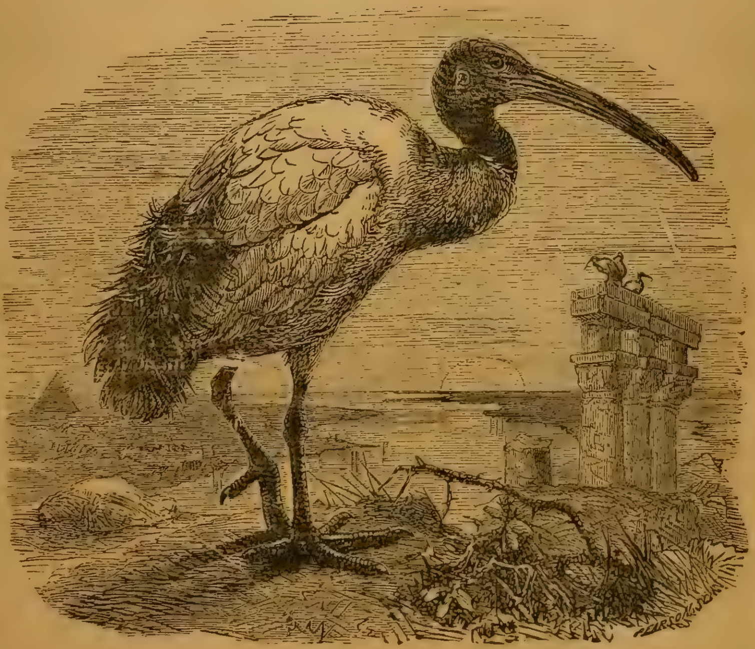

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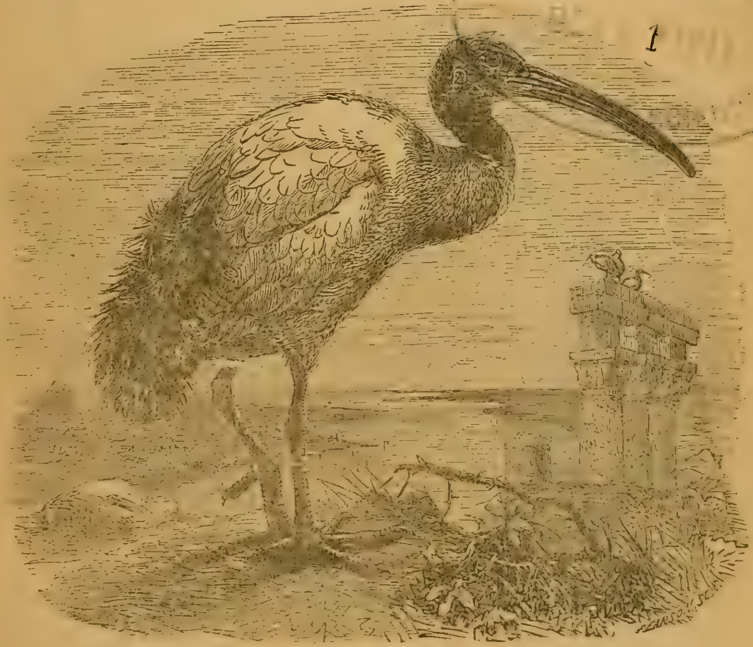

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